AN EXAMINATION OF THE EQUITY OF CAPITAL OUTLAY FUNDING OF PUBLIC EDUCATION: A COMPARISON OF THE EQUITY OF THE CURRENT METHOD OF DISTRIBUTING CAPITAL OUTLAY FUNDING IN THE STATE OF FLORIDA AND THE EQUITY OF GENERAL EXPENDITURES FOR EDUCATION

By

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TO

MY MOTHER,

MY SON,

AND THE MEMORY OF MY FATHER

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TABLE OF CONTENTS

ACKNOWLEDGEMENTS iii

LIST OF TABLES vi

LIST OF FIGURES vii

ABSTRACT viii

CHAPTERS

I INTRODUCTION. 1

- Statement of the Problem 3
- Purpose 7
- Significance. 8
- Limitations of the Study. 10
- Definitions 10
- Summary 11
- Notes 12

II REVIEW OF THE LITERATURE. 15

- Introduction. 15
- Theory of Finance Equity. 15
- History of Finance Equity 19
- Equity and Capital Outlay 24
- History of Capital Outlay 26
- Current Capital Outlay Conditions 28
- Research on Capital Outlay Equity 32
- Facility Funding Methods. 33
  - Introduction 33
  - State Options. 34
    - Flat grants 34
    - Full state support. 35
    - Percentage matching 35
    - Equalization plans. 36
    - State loans 36
    - Building authorities. 36
  - Local Option 37
    - Current revenues. 37
    - Building reserve funds. 37
    - Bonding 38

History of Capital Outlay in Florida. 39
The Florida Formula 41
Equity Litigation 45
Capital Outlay. 61
Notes 74

III RESEARCH DESIGN 97

Introduction. 97
Research Methodology. 97
Measures of Equity. 99
  Range. 101
  Restricted Range 102
  Federal Range Ratio. 102
  McLoone Index. 103
  Relative Mean Deviation. 103
  Standard Deviation 104
  Coefficient of Variation 104
  Interquartile Analysis 105
  Correlation Coefficient. 105
  Regression Coefficient 105
  Elasticity 105
  Gini Coefficient 106
  Lorenz Curve .106
Correlation and Regression Measures 107
Summary 109
Notes 111

IV PRESENTATION OF RESULTS 113

Introduction. .113
Horizontal Equity Measures. 113
  Range Measures 114
    Range and restricted range. 115
    Federal range ratio 118
    Boxplots and interquartile ranges 119
  Deviation Measures 120
    The standard deviation. 121
    The coefficient of variation. 123
    The relative mean deviation 125
    The mcloone index 127
  Fiscal Neutrality Measures 128
    The gini coefficient. 128
    Regression measures 132
Discussion and Interpretation 147
Notes 155

V FINDINGS, CONCLUSIONS, AND RECOMMENDATIONS. 156

Introduction. .156
Observations. .157
Findings. 161

Conclusions 164
Recommendations 165
Recommendations for Further Research. 166
Summary 166

APPENDIX. 168

REFERENCE LIST. 172

BIOGRAPHICAL SKETCH 181

LIST OF TABLES

Table page

1 Horizontal Equity Measures for FEFP, STATE CAPITAL OUTLAY, LOCAL CAPITAL OUTLAY, and TOTAL CAPITAL OUTLAY: Range Measures, Measures of Dispersion from the Mean, and Comparisons to Median Values 116

2 Fiscal Neutrality Measures for FEFP, STATE CAPITAL OUTLAY, LOCAL CAPITAL OUTLAY, and TOTAL CAPITAL OUTLAY. Regressions and correlations were computed with and without outliers (values beyond the upper and lower bound of a 95 percent confidence interval.. 130

LIST OF FIGURES

Figure page

1 List of Equity Statistics Utilized 100

2 Boxplot for Capital Outlay Variables 121

3 Boxplot for FEFP 122

4 Lorenz Curve for STATE CAPITAL OUTLAY/WFTE vs. ROLL/WFTE 133

5 Lorenz Curve for FEFP/WFTE vs. ROLL/WFTE 134

6 Lorenz Curve for LOCAL CAPITAL OUTLAY/WFTE vs. ROLL/WFTE 135

7 Lorenz Curve for TOTAL CAPITAL OUTLAY/WFTE vs. ROLL/WFTE 136

8 Scatterplot for FEFP/WFTE vs. ROLL/WFTE 139

9 Scatterplot for STATE CAPITAL OUTLAY/WFTE vs. ROLL/WFTE 140

10 Scatterplot for LOCAL CAPITAL OUTLAY/WFTE vs. ROLL/WFTE 141

11 Scatterplot for TOTAL CAPITAL OUTLAY/WFTE vs. ROLL/WFTE 142

12 Quadratic Curves for FEFP, LOCAL CAPITAL OUTLAY, STATE CAPITAL OUTLAY, and TOTAL CAPITAL OUTLAY. 144

Abstract of Dissertation Presented to the Graduate School
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By

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The failure to extend equity theory to encompass expenditures for capital outlay as well as general expenditures for public K-12 education constitutes an important problem in several states. This is exacerbated when the need for capital outlay expenditure is high, as is the case in the state of Florida.

The purpose of this research was to answer the following questions: What is the relationship of the equity of total capital outlay revenues relative to the equity of general educational expenditures for public K-12 education in Florida? What is the relationship of the equity of the state and local components of capital outlay and total capital outlay revenues relative to each other for public K-12 education in Florida?

This study focused on horizontal equity for students and equal opportunity, using fiscal neutrality of expenditures as a measure. Four variables were analyzed: general educational expenditures, local capital outlay revenues, state capital outlay revenues, and total capital outlay revenues. Horizontal equity was measured by the range, the restricted range, the Federal Range Ratio, interquartile analysis, the relative mean deviation, the McLoone Index, the variance, and the coefficient of variation. The relationship between district wealth and expenditures was examined through equal opportunity analysis; regression measures were used to accomplish this analysis. Fiscal neutrality was further explored by use of the Gini Coefficient and the Lorenz Curve.

Two conclusions emerged from analysis of the four variables. The first conclusion was that measures for general educational expenditures indicated greater horizontal equity and greater wealth neutrality than measures for total capital outlay revenues. The second conclusion was that the lack of wealth neutrality in total capital outlay revenues was explained by a strong lack of wealth neutrality in the measures for local capital outlay revenues. It was further demonstrated that this lack of wealth neutrality was largely unmitigated by the wealth

neutrality for measures of state capital outlay revenue in spite of additional aid to some low-wealth school districts.

CHAPTER I
INTRODUCTION

Fiscal equity as a concept and an issue in public education funding is not new. Educational theorists and researchers have concerned themselves with creating methods that would advance equity in the process of funding public education and with evaluating widely established funding methodologies for equity. This body of work has not resulted, however, in a generally accepted single set of funding techniques that would constitute a professional and operational consensus in this area.

The increased state role in educational spending and the heightened attention of the judiciary over the last several decades have increased equity. This has been far less true, however, for the funding of capital outlay than for general expenditures in public education. The failure to extend equity theory to encompass expenditures for capital outlay as well as general expenditures constitutes an equity problem of some importance in several states. This becomes a very serious issue when the need for capital outlay expenditure is much more intense than normal--as it is, for instance, in the state of Florida.

In American political theory, the origins of the basic concepts of justice and equity are to be found in John Locke's description of the social contract. For Locke, this is an arrangement in which people freely give their consent for transference of a part of their natural sovereignty to a state in order to increase their security.[1] The founding fathers, particularly Jefferson, relied on natural rights theory as the basis of their political thinking.[2] It was the role of government to protect and secure inalienable, natural rights such as life, liberty, and the pursuit of happiness.[3] All persons should have equal opportunity to gain property and pursue their happiness by talents and industry.[4] According to Jefferson, if all members of society did not obtain education, they would be unable to fully pursue their happiness or secure the welfare and freedom of the state. In the view of Wagoner, this attitude demonstrates Jefferson's commitment to the principle of distributive justice.[5] Jefferson further asserted that the state should therefore educate all according to a sound plan; he even strongly considered advocating that citizenship should be restricted to those who were literate.[6]

The "common good" depends on each member's perception of the best for the whole.[7] All have identical rights and observe identical conditions. Impartiality is required; citizens must be helped or hindered equally, and the government must act with fairness to all, remedying inequities if it has created them. Considerations of fairness and justice may transcend an equality of treatment.

The theory that underlies equity arrangements for educational finance in the United States, in summary, comes from the social contract theory of Locke, which maximizes liberty but equalizes it for all by the use of the state. Equally important is the natural rights theory of the founding fathers, which guarantees the means to protect and realize the inalienable rights of life, liberty, and the pursuit of happiness. The idea of the maximization of the common good, as Alexander has specified, is at the heart of equity thinking in both legislative and judicial activity regarding educational finance.[8] Equity may require deviations from absolute arithmetic equality, so that fairness may be served with regard to those with special needs and deficits.

Statement of the Problem

The objective of this research is to extend equity analysis from its traditional concern with general educational expenditures to capital outlay. It will include analysis, with procedures that illuminate the equity condition from a variety of perspectives, of the impact of capital outlay funding, divided into state and local allocations, on the equity of the total educational expenditure.

The purpose of this research will be to answer the following questions:

> 1. What is the relationship of the equity of total capital outlay revenues relative to the equity of general educational expenditures for a recent year (1988-1989) in Florida?
>
> 2. What is the relationship of the equity of the state and local components of capital outlay and total capital outlay revenues relative to each other for a recent year (1988-1989) in Florida?

Educators and legislators generally agree that all children have a right to at least a basic level of opportunity and quality in their education. Common state constitutional language including terms such as adequacy, efficiency, and equity attest to a general recognition that at least a solid foundation of sound educational process must exist for all. Few educators would dispute the need for adequate facilities as a part of this foundation of educational quality. Growing judicial and professional pressures for equity suggest that those responsible for ensuring this quality must attend carefully to increasing adequacy and equity in capital outlay if these concerns are to be truly served.

Court challenges have traditionally addressed general educational expenditures. A number of recent cases, however, have broadened this focus to include capital outlay expenditures.[9] Although these expenditures are a small fraction of total educational outlays, the heavily local character of capital outlay may create extreme differences in the tax burden and the ability to create and fund facilities among local districts.

Florida provides an excellent example of a state which has made a major effort to create equitable funding formulas for its general public school expenditures, but has made less effort to assure equity in capital outlay. General education expenditures are funded in Florida through the Florida Educational Finance Program (FEFP), which allocates funds on the basis of the product of program cost factors, full time students, and a base allocation per student, adjusted for several other conditions such as district cost differentials and sparsity.[10] A required local effort is supplemented by the state to reach this foundation. Property is reassessed on a yearly basis.[11] The range of expenditures by the sixty-seven districts is low.[12] The methodology is fairly unitary and straightforward, and it shows evidence of serious consideration of equity concerns; it is a progressive, sophisticated funding mechanism.

Capital outlay, on the other hand, is financed in a variety of ways; a number of local and state streams of income contribute to these expenditures. The situation of the state of Florida in 1990 illustrates the potential overburden on poorer districts. In Florida, less than one-third of capital outlay in 1988 came from state funding.[13] The rest originated from local sources: bonds and local millages.

This would not have a major potential equity impact if there were a rough equity in the wealth of the sixty-seven districts in Florida. Unfortunately, from the equity point of view, the disparity in wealth is very large. The wealthiest six districts in Florida average almost $500,000 in wealth (as measured by adjusted assessed property value) per weighted FTE, and the poorest six average less than $30,000.[14] This constitutes a ratio between the two groups in Florida of over 15:1. The problem is not just at the extremes. The ratio of the 75th percentile ($200,000) and the 25th percentile ($60,000) is over 3:1. If more than two-thirds of the capital outlay is being funded from sources so widely disparate in ability to fund, problems in equity and perhaps adequacy would appear to be potentially great.

Perhaps if Florida were a state where capital outlay needs were below the norm, as would be the case in states with shrinking school populations, these potential problems would appear to be minor. But in 1989, Florida's K-12 capital outlay was over one billion dollars.[15] This massive need, when combined with locally based capital outlay funding and extremes in per-pupil wealth, creates a very difficult capital outlay problem. Florida is a state that, when examined purely on the basis of its methodology for general educational expenditures, would appear to be highly equitable. However, when capital outlay expenditures are considered, the potential for serious inequity increases.

To determine if these conditions actually resulted in inequity, it was necessary to apply statistical techniques arising from equity theory. If equity differences were found, it was then necessary to compare the relative equities of state and local revenue sources to each other and to total capital outlay revenues. Several equity requirements were the focus of statistical analysis. Large deviations from the mean revenue per district (per weighted FTE) would indicate unequal treatement of equals (or those made equal by weighting). Ranges, restricted ranges, relative mean deviations, standard deviations, coefficients of variation, and interquartile analysis were used to estimate the relative degree of deviation for these revenues and expenditures. Next, it was necessary to determine if the variations were related to wealth. The Gini coefficient, correlation coefficient, and regression measures were used to make this determination.

Purpose

The major objective of this research is the extension of equity theory and evaluative methodology from its traditional concern with general educational expenditures to inclusion of capital outlay expenditures. Florida was chosen as the source of data for this analysis because of the major impact of capital outlay on the total expenditure situation compared to almost all other states, and for its attempts to create highly equitable formulas for general expenditure and for capital outlay. The study attempts to compare the equity of general expenditures to the equity of capital outlay revenues, and of state and local components of capital outlay to each other and total revenues.

Significance

Concerns about capital outlay are increasing. Honeyman estimated from an analysis of rural needs that the projected replacement cost for the one-half of all public school facilities that were inaccessible, unsafe, inadequate, or nearing the end of usefulness might be as high as $234 billion.[16] Increasing pressure to increase teacher salaries and uncertainty regarding interest rates have led to deferral of district repair and renewal.[17] Problems are particularly severe in small and rural schools[18] and in areas with large population growth, such as Florida.

Capital outlay has not been considered important enough to be the focus of substantial equity analysis, as general expenditures have. Yet the example of Florida demonstrates how significant it can be. Florida's capital outlay expenditures are over a billion dollars a year.[19] Florida's population, increasing from 5 million in 1960 to over 12 million in the late 1980s, has created a requirement of great magnitude for facilities construction. Yet areas away from the massive population growth (rural areas in

North Florida, for instance), have a totally different but equally serious problem with the creation and maintenance of facilities.[20] To leave capital outlay out of the equity equation in a state such as Florida may be extremely misleading.

Problems with school buildings would not necessarily prove a significant educational impact, in and of itself. But researchers in the area of equity have discovered a relationship suggesting a possible connection between facilities and programmatic offerings.[21] The Institute for Educational Leadership, in an examination of teacher effectiveness, morale, and job satisfaction in five cities, concluded that negative effects were associated with depressing, inadequate environments.[22] Bowers and Burkett compared two Tennessee rural schools with little difference in grades, programs, and principal/teacher qualifications, and discovered greater academic progress for students in the more modern building.[23] But, as Wood pointed out, there are serious problems in conducting research in this area, in that it is difficult to sort out the effects of different factors that are commonly found together.[24] Earthman confirmed this, asserting that "the relationship between the physical environment and student behavior and achievement is so very complex that special designs will need to be developed to produce useable results."[25] Earthman also stated that "there is little evidence to suggest that the conventional classroom has any substantial positive effect on student achievement."[26]

The courts have, in the last several years, begun to focus much more seriously on capital outlay problems, from both the standpoints of adequacy and equity. In Pauley v. Kelly,[27] Edgewood v. Kirby,[28] and other major equity cases, courts have discussed at length the deficiencies in equity and adequacy caused by problems in funding of capital outlay and their negative impact on the educational process.

This combination of severe pressures on the mechanisms for creating and maintaining capital outlay, leading to negative educational impacts, and increasing court attention to the problem, suggests that concern with fairness in distribution of available moneys has major significance in the current situation.

Limitations of the Study

This study does not address adequacy. The question of what expenditure is rightfully enough to address adequacy is not considered; the focus of this study is equity in the resources that are available. Within this equity focus, student equity, not taxpayer equity, is emphasized.

Definitions

Capital outlay is revenue or expenditure for the purpose of improving or purchasing fixed assets, including buildings, land, and equipment.[29]

Debt service is revenue or expenditure for the directed to debt principal and interest payments.[30]

Weighted FTE is the sum of the products of the full time equivalent and the weight assigned to each based on extra program expenses required by special student characteristics of that weighting class to which the student has been assigned.[31]

Summary

Equity in the provision of education to children is a great concern. The funding of capital outlay is an important aspect of educational funding. Inequities in capital outlay expenditure can decrease the equitability of overall educational expenditures.

The purpose of this study is to compare the equity of capital outlay revenues to the equity of general educational expenditures and to compare the equity of the state and local components of capital outlay to each other and to the equity of total capital outlay revenues. Florida, because of its large capital outlay revenues, has been chosen as the state for capital outlay revenue analysis.

Notes

1. Kenneth A. Strike, "Liberal Justice: Aspirations and Limitations," in Deborah A. Verstegen and James Gordon Ward, eds., The 1990 American Education Finance Association Yearbook: Spheres of Justice in Education (New York: HarperBusiness, 1991), 204.

2. Jennings L. Wagoner, Jr., "Jefferson, Justice, and the Enlightened Society," in Deborah A. Verstegen and James Gordon Ward, eds., The 1990 American Education Finance Association Yearbook: Spheres of Justice in Education (New York: HarperBusiness, 1991).

3. Ibid., 16.

4. Ibid., 18.

5. Ibid., 25.

6. Ibid., 27.

7. See Kern Alexander, "Equity, Equality, and the Common Good in Educational Financing," in Deborah A. Verstegen and James Gordon Ward, eds., The 1990 American Education Finance Association Yearbook: Spheres of Justice in Education (New York: HarperBusiness, 1991), 273-282.

8. Kern Alexander, "Equity, Equality, and the Common Good," in Deborah A. Verstegen and James G. Ward, eds., The 1990 American Education Finance Association Yearbook: Spheres of Justice in Education (New York: HarperBusiness, 1991), 269-294.

9. See Rose v. Council for Better Education, 790 S.W.2d. 186 (Ky. 1990), Abbott v. Burke, 575 A.2d. 359 (N.J. 1990), and Edgewood Independent School District v. William N. Kirby, 777 S.W.2d. 291 (Tex. 1989).

10. For a full description of the FEFP, see Fla. Stat. Sec. 236.081 (1990).

11. Fla. Stat. Sec. 237.051 (1990).

12. Florida Department of Education, Profiles of Florida School Districts, 1988-89 Financial Data (Tallahassee, FL, 1990), 4-5.

13. Ibid., 122-123.

14. Ibid., 4-7.

15. Ibid.

16. David S. Honeyman, "A Growing Concern for School Buildings," The Educational Facility Planner 27 (March-April 1989): 4.

17. David S. Honeyman and G. Kent Stewart, "Capital Fund Mechanism and the Condition of Facilities in Rural and Small Schools," Research in Rural Education 3 (Winter, 1985): 79.

18. David S. Honeyman, R. Craig Wood, David C. Thompson, and G. Kent Stewart, "The Fiscal Support of School Facilities in Rural and Small Schools," Journal of Education Finance 13 (Winter, 1988): 236.

19. Florida Department of Education, Profiles of Florida School Districts, 1988-89 Financial Data (Tallahassee, FL., 1990), 119-23. This amount is larger than the total public elementary and secondary school expenditures of twelve states, including Montana, a state whose educational finance formula was recently invalidated by its supreme court in Helena v. Montana, 790 P.2d. 684 (Mont. 1989). U.S. Bureau of the Census, Statistical Abstract of the United States, 110th edition (Washington, D.C., 1990), 144.

20. For a discussion of the educational finance problems of rural and small schools, see David S. Honeyman, R. Craig Wood, David C. Thompson, and G. Kent Stewart, "The Fiscal Support of School Facilities in Rural and Small Schools," Journal of Education Finance 13 (Winter, 1988), 227-239.

21. Ibid., 236.

22. Thomas J. Corcoran, Lisa J. Walker, and J. Lynn White, Working in Urban Schools (Washington, D.C.: Institute for Educational Leadership, 1988), 11-20.

23. J. Howard Bowers and Charles W. Burkett, "Effects of Physical and School Environment on Students and Faculty," The Educational Facility Planner 27 (January-February 1989): 28-29.

24. R. Craig Wood, "The Impact of School Building Age on Pupil Achievement: Counterpoint," CEFP Journal 18 (September-October 1985): 20-21.

25. Glen I. Earthman, "Evaluating the Impact of the Building Environment on the Individual," CEFP Journal 23 (July-August 1985): 16.

26. Ibid., 16.

27. 255 S.E.2d. 859, 877 (W.Va. 1979).

28. 777 S.W.2d. 391 (Tex. 1989).

29. State revenues received from all 300 accounts applicable to Capital Projects fund, and local revenues from all 400 accounts applicable to Capital Projects fund. Florida Department of Education, Profiles of Florida School Districts, 1988-89 Financial Data (Tallahassee, FL., 1990), 177. See Florida Department of Education, Financial and Program Cost Accounting for Florida Schools (Tallahassee, FL., 1988), 3/1-3/13 for a fuller discussion of revenue accounting codes.

30. State revenues are received from accounts 321, 322, 326, 341, and additional 300s applicable to Debt Service Funds. Local revenues are derived from accounts 412, 421, 423, 431, and additional 400s applicable to Debt Service Funds. Ibid., 176-7. See Florida Department of Education, Financial and Program Cost Accounting for Florida Schools (Tallahassee, FL., 1988), 3/1-3/13 for a fuller discussion of revenue accounting codes.

31. Fla. Stat. Sec. 236.081(c). See L. Dean Webb, Martha M. McCarthy, and Steven B. Thomas, Financing Elementary and Secondary Education, (Columbus, OH: Merrill Publishing Company, 1988), 153-5, for a discussion of weighting systems.

CHAPTER II
REVIEW OF THE LITERATURE

Introduction

There are many components to the extensive literature relating to capital outlay equity. They include the concept and history of equity and its relationship to capital outlay, the history of capital outlay (nationally and more specifically in Florida), general capital outlay equity research, capital outlay state funding methodologies, and litigation relating to equity and specifically to capital outlay equity.

The Theory of Finance Equity

Equity as a concept has many facets; analytically, divisions may be made in a variety of ways. Underlying equity conceptualizations is a requirement that distribution of resources be in some sense fair. Equality should exist, at least at some basic adequate level, for students and/or taxpayers in resource inputs, process, and/or results. In the first chapter, the foundations of equity theory in Locke's social contract, the natural rights theory of the Founding Fathers, and the theory of the Common Good were discussed. The following discussion operationalizes this basic theory of equity in such concepts applicable to public education as vertical and horizontal equity, taxpayer and student equity, measures of dispersion from the mean, and correlation of expenditures and wealth. This review is an examination of the viewpoints on varieties of equity of several leading finance theorists and researchers.

According to Guthrie, Garms, and Pierce, two schools of thought exist on a general approach to finance equity.[1] One of these schools of thought advocates a floor of basic education required for productive membership in society for all students; the state has no duty to provide more than this. Flat grants and foundation plans result from this philosophy. The second point of view advocates equality in provision for whatever educational services state schools deliver.[2] Within this viewpoint, some favor identical education for each district, and others simply would rather equalize district ability to raise money; guaranteed tax plans, power equalizing, and percentage equalizing plans emerge from this attitude towards equity.[3]

In the view of Thompson, Camp, and Stewart, equity, though defined in various ways, is sensitive to the general principles of taxpayer and student equity.[4] Student equity is seen as wealth neutrality and fiscal resource accessibility. Equal yield for equal effort is the core of taxpayer equity. Each of these dimensions may be divided into horizontal and vertical equity. Horizontal equity is the equal treatment of equals and vertical equity is the unequal treatment of unequals (for example, where desire for equality of outcomes in compensatory programs requires extra resources for some students).[5] Wealth neutrality requires states to make sure that educational service quality was unrelated to local tax base capacity.[6]

According to Burrup, Brimley, and Garfield, equity is expending and distributing revenues with fairness to students and schools; it is not synonymous with equality.[7] Some students require greater expenditures.[8] The weighted-pupil approach to school finance equity emphasizes spending more for students with higher educational costs. In the current debate on excellence, those who emphasize equity would choose special support for poor, low-achieving, and handicapped students, while those who focus on quality would reward schools and districts demonstrating improvement in student achievement.[9]

Wood, Jones, and Riley have stated that earlier definitions focused on pupil-centered equalization of educational opportunity.[10] Recent efforts to define equity focus on horizontal equity and vertical equity. The "equal treatment of equals" principle at the heart of horizontal equity is focused on per-pupil revenue disparity among state school districts, requiring equal per-pupil revenues.[11] The second principle defining fiscal equity is "equal yield for equal effort," often overlooked by fiscal equity evaluation studies. These may be referred to as the "per-pupil revenue disparity" and "fiscal effort neutrality" criteria. Fiscal capacity variance, relating per-pupil wealth and revenues of local districts, is another important standard for measuring equity. "The essence of fiscal equity is that a student's access to educational revenues should not differ substantially from locality to locality."[12]

Input measures, quantifications of that which goes into the educational process (such as funding), are not the only available data for analysis. Other aspects of the educational experience are open to measurement. One possibility is outcomes. Test scores, graduate employment rates, and percentage of college entrants provide quantifications of achievement at certain points in the educational process.[13] Another option is process measures. Measurements of computer use, number of advanced placement classes, and basic subject instruction measurements display quantity of activity in certain educational areas. If input measures are used, teacher salaries, class ratios, or dollars per student are among the key measures commonly used. Output and process measures are often difficult to utilize; school finance equity measurement has concentrated on input variables, even though there is a lack of conclusive evidence linking expenditure and educational outputs.[14]

Third generation equity issues, according to Murphy and Hallinger, are defined by a concentration on processes rather than inputs--school time use, grouping practices, teaching quality, and course content determine quality of access to education.[15] Others argue that outcomes equality is required, requiring a precisely defined production function providing detailed description of process and resource combination leading to various outcomes. Third generation issue analysis exhibits refinement since the Coleman report, as a reaction by researchers attempting to show that schooling quantity and quality, not just student family and social background, affected educational outcomes.[16]

Gurwitz[17] concluded that resource equalization is only one reform goal, and those who hold school district institutional integrity in high subjective value may regard it as unimportant. It is the easiest to quantify and creates the danger that we may focus on single objectives at the expense of goals that lend themselves less to quantification.[18] Burrup, Brimley and Garfield asserted that children's equity should focus more on outputs, but these cannot currently be measured with real confidence, so the emphasis is on inputs.[19]

The History of Fiscal Equity

Elwood P. Cubberley, in 1906, first wrote of school finance problems.[20] He found that flat grants favored cities, which had longer school years and larger classes; rural areas often had teachers for less than ten students.[21] Cubberley advocated a flat grant per teacher, which would channel more resources into the smaller country classes.[22] In advocating this, Cubberley discussed a concept of state responsibility for school funding. He was suggesting that all children be required by the state to receive a minimum of instruction, which required financing.[23] Ward states that Cubberley asserted in his dissertation that sufficient revenue questions underlay all other problems in financing education.[24] Cubberley focused on educational adequacy, a minimum instruction level for all requiring sufficient inputs of school facilities, courses, curriculum, materials, equipment, length of schooling, teacher compensation and training, and provision of school services.[25] Cubberley emphasized maximizing outputs rather than minimizing inputs in his discussions of efficiency.[26] State funds were more appropriate than local, he felt, for equalization, and local districts should be encouraged to go beyond minimums.[27] He perceived a serious violation of equity in failure of relationships between educational need and resource distribution.[28] He stressed taxpayer equity problems.[29] His major contribution was his justification and conceptualization of state education aid to localities.[30]

In 1923, George D. Strayer and Robert M. Haig proposed a methodology that in effect captured a part of the local property tax for a state subsidy--a foundation program specifying a required local effort and providing the difference of the amount raised by that tax and a specified floor.[31] This extended Cubberley's ideas in more detailed conceptualizations of state funding distribution.[32] Strayer and Haig emphasized equal educational opportunity--ensuring minimums, using equalization mechanisms and state control. They advocated a foundation plan, later called the Strayer-Haig formula.[33] The shortfall between revenues generated by the richest district at a certain rate and by other districts at the same rate would be made up by the state.[34]

Harlan Updegraff, in 1922, proposed the expansion of the purpose of education from provision of intelligent workers (and protection of the state from ignorance) to equal educational opportunity for all.[35] His financing proposal rewarded effort, providing equal yield for equal effort.[36]

Updegraff suggested that local ability to pay be tied to state construction and maintenance aid. In 1922, he proposed a state aid program rewarding high local effort districts and penalizing low effort districts--a power equalization methodology.[37] Updegraff and King, in the same year, urged the adoption of a percentage equalizing plan, which provided the difference between a fixed state contribution and a local contribution based on property wealth in the district relative to the average in the state.[38]

Paul Mort later originated the idea of the weighted pupil[39] and expanded adequacy concepts with focus on sparsity factors, cost variations, student-teacher ratios, and facility conditions.[40] Other possibilities were developed. Henry Morrison, in 1930, was led "unerringly to the conclusion that the several states themselves are the appropriate fiscal and administrative units in the support and conduct of the citizenship school which has long been held to be the cornerstone of our policy as a self-governing State," and, as a result, advocated full state funding.[41]

Coons, Clune, and Sugarman advocated power equalization, which equalized ability of localities to support education with the same millage, and protected the principle of subsidiarity, decision-making at the lowest possible level of government.[42] In Private Wealth and Public Education, they favored Updegraff over Strayer and Haig in creation of a power equalizing scheme that rewarded equal effort with equal yield; the basis of this plan was wealth neutrality, the principle that holds that public education quality cannot correlate with district wealth, that "the quality of public education may not be a function of wealth other than the wealth of the state as a whole."[43] Coons defined quality as district expenditure sum per pupil, as money,[44] a standard based on availability rather than achievement, by state provision rather than student production. He defined power equalizing as the provision of equal spendable dollars by equal tax rates.[45] Coons saw a conflict, but not an irreconcilable one, between equal opportunity relating to equal per pupil spending and subsidiarity, which is an emphasis on opportunity and local choice based on the values of individualism and social mobility, district decisions about how much education is needed and how much to spend.[46] He advocated "centralization and uniformity of fiscal policy" as the best solution, a power equalization plan based on the wealth neutrality principle.[47]

Funding capital outlay, with an emphasis on practical methods of state relief to localities, was the focus of early research literature.[48] Some of the prominent equity theorists spoke directly to the equity problems presented by capital outlay. Updegraff suggested that local ability to pay be tied to state construction and maintenance aid. Mort believed that states should pay a fixed percentage of current expenditure. Ability to pay has been a consistent concern in proposals for state assistance. The National Education Finance Project, through its corollary effort, the National Capital Outlay Project, conducted the first full national study of school facility funding through a fifty-state survey of legal bases, practices, and procedures.[49]

Equity and Capital Outlay

It has been commonly assumed in new state finance formulas that only general fund expenditures need be subjected to equity analysis, but redefinition because of a growing body of legal decisions is causing expansion of the equity concept.[50] Burrup, Brimley, and Garfield have stated, regarding capital outlay, that "reform has been virtually off-limits to this branch of school finance."[51] It is not consistent to provide equalization for general expenditures and nothing for facilities; districts with less wealth may not even be able to build the minimum for standard facilities. Wealthier districts obtain lower interest rates on long-term bonding debts. Mobility is a state problem--it is burdensome to require poorer districts with a large number of incoming students to build and equip a number of buildings each year. Districts with abnormally high special populations are penalized. Voter approval is more difficult in less wealthy districts. Overreliance on the property tax, with its regressivity, is increased by relying on it so heavily for capital outlay.[52]

There has been a common belief, according to Thompson, Stewart, and Honeyman, that state aid was only required for general educational expenditures, even though equity reform was spreading rapidly.[53] Expanding equity concepts have included transportation and large special education mandates as well as general fund expenditures - equal opportunity applies to children who are disadvantaged and geographically isolated. Promoters of these equity concepts believe in resource adequacy, widely accessible distribution, and educational appropriateness leading to positive learning impacts.[54]

True assistance for capital outlay is provided by twenty-eight states, but twenty-two states do not provide state support.[55] Capital outlay and adequacy is a problem in virtually all states. In the words of Thompson, Stewart, and Honeyman, "[f]acilities appear destined to occupy an important part of the expanding definition of adequacy and equity."[56] Again, they state that "[a]dequacy and equity have become expansive concepts."[57] There is extensive evidence of great facility needs in school districts. Emerging evidence shows that adequacy and equity concepts may apply to facility construction and maintenance. All parts of the educational enterprise impact on equal educational opportunity, so states may be responsible for facility assistance to districts.[58]

Discussions of capital outlay funding and state involvement by local school districts and state governments are often emotional, according to Thompson, Camp, and Stewart, because of suggestions that capital outlay finance may become a part of equity analysis.[59] School finance equity, the evidence suggests, may require redefinition, which would have particular importance to states with large demographic changes, reapportionment shifts, and issues surrounding property appraisal. Interest is increasing in interdependency of instructional programs and finance procedures, and one possible expansion of the equity focus may be capital outlay. Thompson, Camp, and Stewart stated that "[j]ust as there are concerns about teacher quality, instructional resources, and other achievement variables, there is a concern that equality of opportunity may be affected by bricks and mortar."[60] An increasing body of court commentary regarding finance of facilities may suggest that capital outlay be analyzed for equity.

History of Capital Outlay

Finance of school facilities has traditionally had a low priority for states, according to Thompson, Stewart, and Camp.[61] Sophisticated formulas have been created for transportation, special programs, and operating budgets, but much less attention at policy level has gone to debt service and capital outlay.

Before 1900, building costs were simpler, and schools were often built with volunteer labor and materials. Obsolescence was not an issue.[62] But rural independence and internal sufficiency ended at the turn of the century.[63] Early in the twentieth century, inadequacy of cash reserves led to the beginning of bonding for school construction, and assessment of railroads, oil and gas facilities, and other industrial wealth became important.[64]

The national transformation from agrarian to industrial economic base, with rapid urban growth, required many new facilities. Tax base adequacy and property valuation emerged as an issue.[65] States such as Alabama and Delaware began aiding facility construction at the beginning of the century, and several other states followed their lead.[66] But many states followed the tradition of relying almost exclusively on local sources of income, which often proved inadequate - equalization formulas used for general revenue were ignored.[67] Debt limitations and mill rate caps increased the magnitude of the problem. Facility finance remained a low priority.[68]

The Depression caused more states to contribute funding.[69] However, this increase in state expenditures did not meet increased needs for new facilities.[70] Changing conditions after the Second World War indicated that reconsideration of local and state roles in capital outlay funding was necessary.[71] Tremendous backlogs of needs had been generated by the economic aftermath of the First World War, the Depression of the 1930s, and the Second World War. A sharp increase of population followed the war.[72] Reconceptualization of instructional procedures and educational objectives made much existing plant obsolete. Reorganization into larger districts and a strong movement to the suburbs further exacerbated the situation.[73] The reorganization of 125,000 districts into 16,000 by the late

1960s diminished the strength of the idea of the total responsibility of the close-knit community for education.[74] Resistance to consolidation during the 1960s created willingness by state governments, as an inducement to districts, to aid facilities.[75] Increased educational costs including construction made "pay-as-you-go" plans much less practical, and unrealistic state limits on bonding created more difficulties.[76] From the end of the Second World War to the beginning of the 1970s an unprecedented volume of facility construction occurred.[77] By 1965, 80 percent of the states provided some aid to districts for capital outlay and debt service.[78] Other characteristics of post-war capital outlay provision, according to Barr and Garvue, include liberalization of debt limits and improvement in assessment practices.[79]

Current Capital Outlay Conditions

A survey of half the public school buildings in the United States by the Education Writers Association in 1989 established that 25 percent of the buildings lacked sufficient space, suitability, and safety for teachers and students, and another 33 percent were at risk, through deferred maintenance, of becoming inadequate.[80] Over half the schools were built in the 1950s and 1960s, when school construction was rapid and cheap, and were meant only to last around 30 years; these buildings are deteriorating quickly.[81]

In addition to this, other stresses are heavily impacting the school facility infrastructure. Current population growth is dramatically uneven; e.g., Florida will require 816 new schools in the next decade. According to the EWA survey of fourteen states, only 39 percent of the projected construction and renovation need will be met. Requirements to decrease class ratios and add math and science classes are increasing problems for districts with increasing enrollments.[82] Pressure to increase teacher salaries and fund career ladder and merit pay programs, combined with national financial instability affecting interest rates, has caused deferral of district repair and replacement. Rural and small schools have serious problems resulting from inadequate tax base and total reliance in many places on local revenue.[83]

States estimate at this time that $84 billion is required for new and retrofitting construction, and another $41 billion is needed for repair and maintenance. Honeyman estimated from an analysis of rural needs that the projected replacement cost for the 50 percent of public school facilities that were inaccessible, unsafe, inadequate, or nearing the end of usefulness might be as high as $234 billion.[84]

Although states pay more than 50 percent of the operation of local schools, they only contribute 23 percent of the facility construction costs.[85] In a 1987 study, two states fully funded capital outlay, twenty-seven employed equalized, flat, or matching grants, eleven used debt service grants, six had created capital loan funds, and twelve allowed building authorities. Sixteen states gave no assistance.[86] States often do not fund support functions, such as health and safety review for buildings and technical assistance on design, construction, and maintenance, leaving the task to often inadequately trained local staff.[87]

The American Association of School Administrators, in cooperation with the Council of Great City Schools and National School Boards Association, discovered a $25 billion maintenance backlog for urban schools in the United States.[88] The research literature also shows that replacement, modernization, handicapped accessibility, Title IX, and expanding needs in the area of curriculum and technology have gone beyond the capacity of local districts to pay.[89]

The literature focuses on a backlog of district need in capital outlay areas, and documents relative ability to pay for unmet needs. Both Stewart and Woolbright found that state inaction in Arkansas had created a serious burden of unmet facility needs.[90] Deferred maintenance and construction in Oklahoma is estimated to be $622 million.[91] North Carolina has noted $3.2 billion in needs that have not been met.[92] In Texas, evidence has been produced that $5.4 billion is needed for facility funding.[93] Honeyman and

Stewart found in Kansas that average building age suggested evaluation of continued utility and a correlation between debt levels and maintenance decisions.[94] They also discovered a $60 million maintenance deferral in districts of less than 1000 students. They concluded that deferred maintenance decisions were related to local wealth. Other studies by Honeyman and by Thompson have extended and confirmed equity concepts. Devin found $321 million in unmet deferred maintenance needs in Kansas, and noted correlation of general fund aid and deferred maintenance levels.[95] These indicators show that failure of states to support facilities causes equity violations because physical condition of facilities becomes wealth-related, as does deferred maintenance. Similar results are likely to be found in all twenty-two states that do not provide facility funding, and adequacy problems in the remaining twenty-eight states are a matter of concern.[96]

In total, the result of this evolution in capital outlay provision for the public schools is dramatically negative, especially when reinforced with deterioration of public support for education. In the words of Honeyman, Wood, Thompson, and Stewart:

> There is a broad and pervasive concern that the methods used to finance America's infrastructure are inadequate. Evidence exists which indicates that an aging and overburdened population has lost contact with public schools and believes that education no longer serves its central, unifying purpose in American society. As a result, school districts continually experience tax limitation referenda, board of education

> resignations and recall elections, as well as failed bond elections for the purpose of building, renovating, and repairing school facilities . . . . (T)here is an increasing amount of literature which suggests that many school district are confronted with insurmountable resistance to providing adequate and exemplary facilities for school children.[97]

Research on Capital Outlay Equity

Most capital outlay equity quantitative and policy research has been conducted since the 1960s.[98] Researchers have consistently found that heavy property wealth reliance has a negative effect on facility condition and adequacy, and have called for increases in state involvement in order to neutralize local assessed valuation effects.[99] Honeyman, Wood, Thompson, and Stewart found, in their study of schools with less than 800 enrollment in rural and small school districts, a great inability to finance capital outlay at the levels required for safe, accessible, and adequate buildings.[100] Corcoran, Walker, and White discovered in a survey of 420 persons in five urban districts that 30 percent of the schools were judged inadequate and only 10 percent were rated good by respondents; they concluded that one-third of the schools had serious facility problems, primarily in the areas of lack of space, not making major needed repairs, and inadequate maintenance.[101]

Research literature and court proceedings point to significant assocations between unmet needs in facility funding and wealth dependency.[102] Equity research has discovered a relationship between facilities and wealth, implying a possible connection between facilities and educational program quality, and produced evidence which supports increasing involvement by the state.[103] The Institute for Educational Leadership, in a study of teacher morale, effectiveness, and job satisfaction in five cities, found that negative effects were associated with depressing, inadequate environments.[104] Bowers and Burkett compared two Tennessee rural schools with similar grades, programs, and principal/teacher qualifications, and discovered more academic progress for students in the more modern building.[105] However, controlled research studies, according the Glen Earthman, are scant and incomplete - definite connections between various environmental aspects and successful learning and teaching are not possible now.[106]

Facility Funding Methods

Introduction

As Wood has stated, "...[t]he financing of public school facilities in America is a formidable undertaking."[107] Nine billion dollars in school bonds were sold in 1987, down from eleven billion in 1986. Construction costs per student ranged from nearly $6,800 for elementary students to $10,300 for high school students.[108]

This financial burden is usually shared in some fashion between states and localities (although some states, such as

Kansas, Louisiana, Oklahoma, and Virginia, provide no direct state funds for capital outlay), because it would become untenable if either had to assume it alone. If states handle all the financing, no incentive for local fiscal prudence exists, or underfunding results from limited state resources.[109] On the other hand, poor school districts have an inherent disadvantage in ability to carry out facility construction.[110] The wealth disparity is great - in some states, fiscal ability range between wealthier and non-wealthier districts is ten to one.[111] According to Jordan and Stewart, in half the states in America, local school districts are restricted to their own tax base for capital improvement funds.[112]

State Options

Several options exist for state aid to capital outlay for public schools. Among these are flat grants, foundation programs, guaranteed tax base, percentage equalizing, and full state funding.

Flat grants. When using a flat grant plan, a fixed amount of funds is allocated by the state to districts for debt service and/or construction, often based on average daily membership or attendance.[113] Administration is relatively easy because total required funds may be anticipated with accuracy. Use of state funds reduces property tax dependency.[114] Local control remains strong, although a statewide tax base is used and provides some equity, and administration is simpler than with more complex formulas; however, districts receive funds without regard to need and are often seen as merely supplemental to local effort.[115]

Full state support. The state assumes all construction and debt service costs.[116] Need determination is made at state level and local assessed valuation does not limit ability to receive required funding for capital outlay.[117] In reality, all projects requested are seldom funded. The advantage of this method is the high degree of equalization and system of allotment that is need-based, not dependent on wealth and desire of districts.[118] This method is most desirable from the equity viewpoint.[119] Additionally, tax burdens are more equitably shared, high need districts are served first, and interest costs are reduced.[120] One disadvantage is concentration of control at state level.[121] Others are insufficient funding, minimal facility adequacy, reduced innovation, and erosion of maintenance and operations budgets.[122]

Percentage matching. This method provides districts with a specified percentage of annual debt payment.[123] A floor is provided for school districts conducting capital outlay improvement programs; taxpayers match state grant at a level that is state-predetermined.[124] Local effort is encouraged, but if districts are too poor, they cannot meet the required rate of effort, while wealthy districts can

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easily surpass it.[125] Percentage matching allocations are often not very high, and only with high aid levels under this method can equity be served.[126]

Equalization plans. In this method, state payments are inversely related to local wealth.[127] There is a similarity to general fund financing.[128] An advantage is creation of a similar level of facilities without undue tax burden on low fiscal ability districts.[129] The disadvantage is the large amount of state funding that is required;[130] the state may not be able to finance all needed facilities.[131]

State loans. Funds are backed by the state's full credit, so that slightly lower interest rates may result.[132] But this method is not related to equity; indeed, districts with highest facility needs often have the least ability to finance the debt that results even at lower rates.[133] Also, with few exceptions, loans are unrelated to district fiscal capacity, with negative implications for equity.[134] In addition to this, loans may have served as stop-gap measures that allowed failure to deal with issues of insufficient funding capacity on district level.[135]

Building authorities. These may be state or local.[136] Private bond funds are usually utilized to construct facilities, which are then leased to districts for several years; at maturity, the district receives the title. Building authorities are often used to surpass archaic debt limits specified in the state constitution, e.g. Indiana. Equity principles have little application.[137] Use of professionals specializing in financing and leasing facilities is a positive aspect; however, use of building authorities could lead to accumulation of excessive debt.[138] Building authorities, as semiautonomous public corporations, may construct buildings and issue bonds.[139] This method is also referred to as a sale lease-back arrangement.[140]

Local Options

Current revenues. This pay-as-you-go method requires that the entire capital outlay cost be derived from local and current tax revenues.[141] One advantage of this method is the elimination of interest payments and bond election costs. Others are disincentives to extravagance and attractiveness in rapid-growth, high-need areas.[142] Bonding capacity may be saved for emergencies. The disadvantage is very high assessed valuations or tax rates, making this method increasingly impractical.[143] Other disadvantages are general inability to provide sufficient funding except where high revenue-to-cost ratios exist and inability to take advantage of borrowing during inflationary periods.[144]

Building reserve funds. Taxes are accumulated in special funds, dependent upon state accounting codes, which may include sinking funds (also called capital reserve funds, building funds, school building reserve accounts, capital outlay funds, and cumulative building funds) used to finance capital outlay.[145] A maximum tax rate may be imposed by the state.[146] Advantages include limited usage of revenue and interest pursuant to current Internal Revenue Service regulations.[147] Bonding capacity, as with current revenue methods, may be saved for critical situations, and debt service is avoided.[148] Tax liability is dispersed over several years.[149] Disadvantages are that taxpayers no longer residing in the district at later times do not receive benefit, and times of rising inflation can erode the reserve fund's value.[150] Additionally, districts are often unable to predict future building needs, tax effort may erode current operation and maintenance expenditures, and the benefits-received principle is violated.[151]

Bonding. The most common recent method of local financing is general obligation municipal bond issuance.[152] General obligation bonds are issued by governmental entities, with issuer full faith and credit.[153] Building authorities and holding corporations have been used in specific instances for bond issuance and leasing to districts to circumvent state debt limits. The advantages of bonding are smaller annual tax burdens during term of issue, ability to amass large amounts of funds for building needs, and desirability of tax exempt bonds to investors.[154] The benefits-received principle is generally respected because the buildings are in use during the time of payment.[155] Disadvantages include increased facility cost because of interest and larger community debt.[156]

History of Capital Outlay in Florida

During the period 1829-1838, several laws authorized rental collections for application to school construction and operation, and fines for trespassing were channeled into the school fund as well.[157] By the early nineteenth century, plans for the state to provide all school appropriations were made unreasonable by the large indebtedness already built up by counties due to school construction and a land boom.[158] In 1912, the legislature, which had previously passed legislation authorizing cities and towns to issue public school construction bonds, created a constitutional amendment allowing school districts to issue bonds for the purpose of building schools and to assess a additional 5 mill levy to float and retire these bonds.[159] During the late 1920s, growing state financial problems forced schools to issue bonds for current operating expenses as well as for capital outlay.[160] A recognition of the inadequacy of school buildings, as well as low teacher salaries, was instrumental in the creation of the Minimum Foundation Program in 1947.[161] This program included provisions for allocating $300 per instructional unit for capital outlay, an amount based on average depreciation of school plant.[162] In 1952, following the recommendations of a Governor-appointed citizen's committee, the legislature proposed an amendment to the State constitution which channeled motor vehicle license revenues into public school capital outlay; the amendment was approved by the electorate.[163] In 1957, each county was alloted $200 for each additional pupil in average daily attendance starting with the 1955-56 school year, if the county matched the total allotment and put the money in a fund for school construction separate from the school fund for the county.[164]

In 1972, a legislative act stipulated that additional capital outlay funds for the K-12 program would be allocated by allotments for the number of instructional units greater than the number that existed in 1967-68.[165] Reforms of 1974 to capital outlay spending were intended to provide equal educational facilities, just as equal operating funds were being provided.[166] A constitutional amendment also passed in 1974 alloted a share of the gross receipts utilities tax to the public schools.[167] The Special Facility Construction Account was established in 1976 for the provision of funds to school districts with insufficient resources for immediate needs in school construction.[168] The 1980-81 legislature authorized school boards to create an additional 2 mill levy on nonexempt assessment valuation for capital outlay purposes.[169]

The Florida Formula

General education expenditures are funded in Florida through the Florida Educational Finance Program (FEFP), which allocates funds on the basis of the product of program cost factors, full time students, and a base allocation per student, adjusted for conditions such as district cost differentials and sparsity. A required local effort is supplemented by the state to reach this foundation. Capital outlay is financed in a variety of ways. On the state level, gross utilities taxes provide revenues for the Public Education Capital Outlay funds, and motor vehicle licensing revenues fund CO&DS (Capital Outlay and Debt Service), distributed on the basis of instructional units. Local sources include a 2 mill levy not requiring an election, another 2 mill levy for a maximum of two years that does require an election, and the Local Capital Improvement Fund for long-term bond issues. Impact fees and lease-purchase arrangements also play a minor role in the capital outlay process. A large majority of funds are locally generated.

The system for funding capital outlay for public education in Florida is complex, and involves a number of discrete state and local sources, as listed previously. The first of two major provisions for the state is Public Education Capital Outlay (PECO) funding. Funds for remodeling, renovation, maintenance, repairs, and site improvement are allocated to school districts by a formula based on a "sum of the digits" methodology involving (a) the Florida Inventory of School Houses, (b) age values of buildings, and (c) relative need.[170] The relative need is equal to the product of the building value and the building age divided by the sum of the years' digits, divided furthur by total state needs, and finally multiplied by the appropriation.[171] The building value is equal to the product of the square footage, the current average new construction cost, and a preset constant.[172] The building age is equal to the product of the prior building age and one minus last years allocation under this formula, divided by last year's building value, to which one is added.[173] The life of the building is expected to be fifty years.[174] PECO functions through the "Public Education Capital Outlay and Debt Service Trust Fund," through which school districts share with higher education in proceeds from the school utilities tax.[175] The State Board of Education issues state bonds for Legislature authorized capital outlay projects.[176] Also, under PECO are funds for Special Facilities Construction, which may be spent for only one project per district, approved by state committee, and requested by districts that have special capital outlay needs with no other source to meet them.[177]

PECO expenditures for survey-recommended projects are allocated by use of an Office of Education Finance formula.[178] Forty percent of the appropriation is to be divided among districts based on percentage of 1984-1985 capital outlay FTE (four years prior to the current year). Sixty percent is divided on the basis of percentage of growth capital outlay FTE, the excess of capital outlay FTE in 1988-1989 over 1984-1985 (the last four years, including the current year).[179]

A second significant state source is Capital Outlay and Debt Service (CO&DS) funds, whereby the proceeds of revenues derived from the licensing of motor vehicles is allocated to school districts for capital outlay funding and debt service. Trust funds are allocated to school districts according to a formula specified in the Florida Constitution.[180] The district entitlement is equal to the product of instructional units (defined by the Division of Public Schools, and currently about 23 FTE) in the district in the 1967/1968 academic year and $600, added to the product of the difference of the number of current units and the 1967/1968 units and $800.[181] The Board of Education manages a sinking fund,[182] and issues bonds for capital outlay.[183] The district CO&DS allocations are used to repay these bonds. Districts must conduct a five-year survey of their capital outlay requirements, create a long-range plan based on the survey,[184] and submit a capital outlay budget with expenditures specified by project, from all available funding sources.[185] The state charges a 1.5 percent administrative fee, and debt service on outstanding bonds is also withheld.[186] The net debt service is paid from the first disbursement, then the balance is distributed to districts twice annually. Interest is prorated on the basis of entitlement to the districts.[187] Districts may participate in Capital Outlay Bond Issue sales (COBI), up to a bonding capacity equal to the sum of the entitlement for the previous year and the estimated entitlement for the current year, divided by two (or the lower of the two figures in the numerator if the entitlement is declining).[188] Costs of debt service to old bonds are subtracted from the entitlement, which is then multiplied by .90 to calculate the net available for new issues.[189] Bond issues must list projects for which funds are to be expended.[190]

Several local sources are also available for capital outlay. Two "pay-as-you-go" plans exist. The State Constitution authorizes local millage elections for the purpose of satisfying capital outlay needs.[191] These levies may only last for two years, and may not exceed 2 mills.[192] Districts may also levy 2 mills without an election; only the ratification of the school board is required.[193] The largest source of funds is the Local Capital Improvement Fund, which provides for bond issues to be repaid from local property taxes and includes income from the sale of school properties.[194] Impact fees and lease-purchase agreements are innovative capital outlay fundraising techniques which are currently used in Florida.

Equity Litigation

In the last twenty-five years, the courts have provided the impetus for major equity changes in the financing of public education in the United States. There have been more than 100 cases seeking a greater degree of equity in public school financing.[195] Thro divided the modern history of finance equity litigation into three "waves."[196] This study will adopt Thro's three-wave structure for the purpose of discussing the evolution of equity litigation over the last several decades, integrating the analysis of others into his overall framework. The first wave, from 1971 to 1973, began with the acceptance of the fiscal neutrality theory by the California Supreme Court in Serrano I.[197]

The second wave, a series of court actions focusing on provisions of state constitutions triggered by the defeat in Rodriguez v. San Antonio Independent School District[198] in the Supreme Court, lasted from 1973 to 1979.[199] The third wave consisted of several decisions invalidating state finance systems, most notably Helena Elementary School District Number 1 v. State,[200] Rose v. Council for Better Education,[201] and Edgewood Independent School District v. William N. Kirby,[202] issued during 1989.[203]

Before the first wave, state court decisions had been made that would have an important impact on the future of equity legislation. The earliest legislation on school finance was concerned with tax uniformity. During the period from 1912 to 1964, cases were brought in Maine, New Mexico, Ohio, Oklahoma, and South Dakota. The typical issue was whether the legislature was required to distribute tax revenues equally to all districts, after an equalizing assessment. Courts generally ruled that the state was free to distribute the taxes in whatever manner the state desired.[204]

The Brown v. Board of Topeka [205] decision, the first case with a real impact on modern court equity decisions, gave stimulus to equity concerns by emphasizing the importance of education to the states and localities:

> Education is perhaps the most important function of state and local governments...in these days, it is doubtful that any child may reasonably be expected to succeed in life if he is denied the opportunity of an education. Such an opportunity, where the state has undertaken to provide it, is a right which must be made available to all on equal terms.[206]

Not surprisingly, then, early cases, such as San Antonio Independent School District v. Rodriquez, Van Dusartz. v. Hatfield,[207] Burruss v. Wilkerson,[208] and McInnis v. Ogilvie,[209] focused on the federal protection clause.[210] In McInnis v. Shapiro,[211] the first major case to merit attention, Illinois public school finance statutes were challenged on the grounds that Fourteenth Amendment rights to equal protection were being violated, based on wide variation in expenditures per pupil.[212] The court ruled that the finance system did comply with the Fourteenth Amendment, and that no invidious discrimination was caused by the distribution system.[213] A similar claim, that classification of school districts by wealth constituted a violation of the Fourteenth Amendment, was successful in Van Dusartz v. Hatfield.[214]

The first school funding plan to be invalidated was California's. In Serrano v. Priest,[215] the court found that a state's public education finance expenditures could not correlate with local property wealth.[216] Federal and state equal protection guarantees were violated because of gross disparities in district revenue.[217] The court used for the first time the doctrine of fiscal neutrality, the concept that local property wealth and educational revenues not be correlated.[218] Serrano created the basis for challenges based on equal protection by formulating the wealth neutrality concept and challenging the equal protection clause in the state constitution.[219]

In Rodriguez v. San Antonio, the Supreme Court reversed a lower court ruling that the Texas school financing system was discriminatory because wealthy districts were allowed to utilize lower tax rates while providing a higher quality of education, thus creating a suspect class and denying Fourteenth Amendment protection to plaintiffs.[220] The Supreme Court held that Texas provided a basic education, encouraged local control, and did not disadvantage a suspect class. Therefore, there was no violation of the Fourteenth Amendment equal protection clause.[221] Education as a right was neither explicitly nor implicitly protected by the Constitution, so education was not a fundamental right, and rational basis scrutiny was appropriate.[222] In the words of Thro, "the Court's decision represented the death knell for school finance reform litigation brought under the federal equal protection clause."[223] In Thro's analysis, the first wave, triggered by Serrano, was ended by Rodriguez; the second wave would begin with litigation based purely on state constitutions.[224]

Since Rodriquez, the federal judicial role in public school financial reform has been very limited, but some protection to equity in educational funding is still provided. In Papasan v. Allain,[225] a case involving lost Section Sixteen land income, the Supreme Court held that when discrimination between districts, without a legitimate state interest, existed, it was sufficient to constitute a cause of action, thereby providing a limited amount of federal protection for education.[226] In Plyler v. Doe,[227] the Supreme Court stated that mid-level scrutiny, located between strict scrutiny and rational relationship and requiring substantial relation to an important state interest, was required in a case involving a state's refusal to educate illegal aliens.[228] Although there was no ruling on fundamentality and the case was concerned with total deprivation, this ruling does suggest that federal involvement in educational equity problems remains a possibility.[229]

The second wave of public school finance legislation provided two avenues of approach to achieving public school finance equity through the courts - equal protection language in state constitutions and education articles in those constitutions.[230] According to Thro, equality guarantee clauses (which mandate equal protection)[231] were substantially more effective than education clauses during the second wave.[232] Only eighteen states have specific equality guarantees in state constitutions, but where the clause is missing, the courts have read into other provisions requiring equality the principles of equal protection.[233]

Thro stated that there are three modes of analysis used by state courts for equal protection concerns.[234] First, the state may follow federal protection doctrine without deviating. Second, the state may retain the basic federal structure for levels of scrutiny, but develop its own criteria for fundamentality or suspect class. Third, the states may reject the federal approach entirely, and develop its own framework and analysis.[235] Most states use the same rational basis and strict scrutiny tests applied by the Supreme Court.[236]

Fundamentality is a critical consideration in state court analysis. If education can be established as a fundamental right, then strict scrutiny is the appropriate standard of review, and states would be required to show a compelling interest to justify their finance formulas.[237] In the federal analysis, fundamental interests are those implicitly or explicitly guaranteed by the constitution, such as freedom to travel, marry, and procreate, and freedom of speech.[238] Fundamental rights are individual rights and liberties that are at the core of free, representative government.[239]

In Serrano, five reasons for the finding of fundamentality were stated: the large number of people affected, the critical importance to social stability and economic prosperity, the long period of time residents are affected, the significance of effects on the state's residents, and the manditory nature of public education.[240] Underwood and Verstegen found that ten states had rejected the Rodriguez framework - in five states, i.e., Georgia, Idaho, Connecticut, Maine, and New York, state courts ruled that education was not a fundamental right in the Rodriguez sense; California found that it was; four states, i.e., Oklahoma, Ohio, Oregon, and New Jersey, made no decision on fundamentality; and two states, Connecticut and West Virginia, determined fundamental right under their own constitutions (Arizona found that a fundamental right existed, but used rational standard to test it).[241]

Thompson found that three basic arguments had been widely used throughout finance litigation - education as a fundamental right because of its impact on the economic and social structures of the state, unequal opportunity created by funding disparities, and lack of equal protection because of correlation of wealth and school expenditures.[242] Equal opportunity means that residence does not unduly condition education.[243] Equal educational opportunity provides a link between equal protection and education articles in state constitutions.[244]

The other major legal strategy was the use of state education articles instead of equal protection related provisions. An education clause exists in all state constitutions except those of Mississippi and Alabama.[245] At a minimum, these clauses require that a free public education system be established and maintained. Almost all second wave cases involved state education clauses (although many also involved equal protection guarantees). These clauses, said Thro, were not particularly effective during the second wave.[246]

Manteuffel referred to Robinson v. Cahill[247] as the archetypical case brought to court under a state's education article.[248] The court did not find that education was a fundamental right, but it did discover a violation of the "thorough and efficient" language of the state constitution, which it interpreted as guaranteeing equal opportunity for the schoolchildren of the state.[249] Funding disparities, in the view of the court, showed that the state had failed to provide the level of education mandated by the New Jersey state constitution.[250]

The State Supreme Court of New Jersey ruled that the finance system of the state violated the thorough and efficient clause of the state constitution.[251] However, the finding of the lower court that the state equal protection clause was also violated was overturned.[252] The court in Robinson used an independent analysis which balanced harm to the children of the state created by the present system against possible benefits such as the local control of schools. If the court decided that the harm were greater, the system was not upheld.[253] Robinson opened the way for states to review their methods of school fund allocation by the scrutiny of education clauses that used such language as thorough and efficient, adequate, or ample. Serrano focused on equity, but Robinson focused additionally on adequacy.[254]

Unlike New Jersey, the West Virginia Supreme Court in Pauley v. Kelly [255] relied on the state equal protection clause, finding education a fundamental right.[256] However, the analysis went beyond fiscal neutrality. The court also relied strongly on the "thorough and efficient" language of the state constitution to decide that high quality statewide educational standards were required.[257] In its interpretation of thorough and efficient language, the court required the state to go beyond basic skills education, to the development of minds, bodies, and social morality, to the preparation of students for useful and happy occupation, citizenship, and effective economic participation.[258] This required quality in personnel, instructional materials, and facilities. Success was defined by output. Children should be successfully educated in certain matters, not only to a standard of adequacy, but to their capacity.[259]

The court, in Pauley v. Bailey,[260] was not willing to evaluate equity on the basis of dollars alone, focused on the resources available to the districts.[261] Expert witnesses were used to generate lists of resources against which school districts were assessed. When serious deficiencies were found in the ability of districts to measure up to these resource standards, the system was found to be unconstitutional.[262]

Radner stated that there were compelling reasons for states to construe their constitutions more expansively that did federal courts[263]. The provision for public education is in all likelihood the most important state function.[264] State constitutions may be said to confer greater rights than the federal constitution.[265]

Radner divided state education articles into four groups, based on the strength of the article for judicial purposes.[266] The articles of the first category of states contained only general education language, such as guarantees that there would be free schools in the state. Category 1 requires at least the minimum necessary education to meet the political and economic needs of society.[267] The second category emphasized educational quality (i.e., thorough and efficient language). The third category contained stronger, more specific language about the educational mandate (for instance, the Rhode Island constitution required the promotion of public schools and the adoption of all means necessary to secure education's advantages). An extra mandate exists in Category 3, requiring all suitable means, or placing emphasis on the relationship between the exercise of basic rights and education.[268] In the fourth category, states mandated the strongest commitment (Wisconsin's language makes it the paramount duty of the state to make ample provision for all children's education).[269]

Until the end of the second wave, most challenges, using whatever method, had not been sustained, by any count.[270] In Thro's analysis (he found six post-Robinson I victories for plaintiff and fifteen defeats), the second wave was at best a mixed success for the forces of reform.[271] Use of both the education clause and/or the equality clause had resulted in extremely varied holdings; indeed, the outcomes were completely unpredictable.[272]

In Thro's framework, the third wave begins in 1989 with Helena Elementary School District v. State.[273] In a unanimous decision, the Montana State Supreme Court ruled that the school funding system was unconstitutional because of a failure to ensure equality of educational opportunity.[274] The decision upheld a lower court ruling that Montana's foundation program relied too heavily on local property taxes, so that students were denied equal educational opportunity in poorer districts,[275] but did not uphold the lower court's finding that education was a fundamental right guaranteed by the equal protection clause of the state constitution.[276] Rather, the court found that the funding disparities violated student rights to equal educational opportunity under the state's education article.[277] The court stated that the minimum foundation program did not provide funds for a even minimal quality level.[278]

On June 8, 1989, The Kentucky Supreme Court, in Rose v. Council for Better Education,[279] ruled that the entire school governance and finance systems violated the state constitution's requirement for efficiency.[280] Laws creating school boards, school districts, and the state department of education were invalidated.[281] The lower court had found that the state funding plan was discriminatory against taxpayers and students, that it violated the Kentucky constitution and the Fourteenth Amendment; discrepancies in resource access and salaries, as well as poorer districts' narrow curricula, higher dropout rates, lower college entry rates, and lower standardized test scores were cited by the court.[282] The Kentucky Supreme Court upheld the decision of the lower court, finding that education was a fundamental right in Kentucky.[283]

The court found that the Kentucky system was inadequate and underfunded, riddled with inequalities, ranked in the lower 20-25 percent of almost all categories that were utilized for the evaluation of educational performance, and lacking in uniformity of educational opportunity.[284] Even affluent districts were found to be educationally deficient, in the view of the court.[285] The court listed seven capacities that were characteristic of efficient systems: written and oral communication skills; knowledge of political, social, and economic systems leading to informed choices; understanding of the processes of government, self knowledge and knowledge of wellness; knowledge of and appreciation of arts; and academic and vocational skills that would enable students to compete effectively in job markets in Kentucky or surrounding states.[286] Efficient systems were characterized as free for all students, basically uniform, and available to everyone. The general

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assembly was responsible for funding an adequate education for children (an education developing the seven capacities), without waste or mismanagement.[287]

On October 2, 1989, in Edgewood v. Kirby,[288] the Texas Supreme Court declared that the state's constitutional requirement for an efficient system that would achieve general diffusion of knowledge was violated by the school financing procedure.[289] The trial court found a constitutional violation, but the Texas Court of Appeals reversed, finding the system constitutional.[290]

The state supplied 42 percent of total educational expenditures, and localities provided another 50 percent. The principal source for these expenditures was the property tax. Taxable wealth in the richest district was 700 times the poorest district.[291] The Foundation School Program awarded more state aid to property poor districts, but funding was not enough to cover minimum requirements mandated by the state.[292] Debt service recieved no foundation funds, the transportation allotment was underestimated, and the career ladder was not sufficiently funded, so local expenditures in property poor districts were used for bond payments, while high wealth districts used funds for programs of enrichment.[293]

Districts with more wealth were able to acquire better teachers, create a wider range of curricula, and purchase newer and better technological equipment. They possessed superior libraries, more parental involvement, and programs for retention of potential dropouts. Richer districts had more, and more varied, courses and extracurricular activities.[294] The state constitution required efficient education, not cheap, inexpensive, and economical education.[295]

The court carried out a historical investigation,[296] as did the Supreme Court of Kentucky. They found a limited and unbalanced diffusion, not a general one. Additional expenditures were not sufficient.[297] Efficiency did not, in the court's view, allow resource concentration districts of great property wealth that were taxing low when districts with much less wealth taxed themselves at a higher rate could not generate sufficient revenues to meet minimum standards. The court required a strong relationship between tax effort and resources available, and equal access to similar revenues per pupil for similar tax effort.[298] Like Kentucky, the court did not mandate specific legislation. In both cases, the court pointed to the duty of state legislatures to maintain public free schools in an efficient system if a state were to make education a fundamental right, including adequacy in funding, and creation of a high degree of uniformity in delivery of educational opportunities.[299]

On June 5, 1990, in Abbott v. Burke,[300] the New Jersey Supreme Court ordered the state to raise spending in the state's poorest city school systems to the level of its districts of greatest wealth.[301] The state's school-funding system was declared unconstitutional for poorer urban school districts, because students were not delivered the "thorough and efficient" education mandated by the state constitution.[302] In the opinion, the court declared that students in poor districts have the same right to the same level of educational opportunity that money can purchase for others.[303] The constitional failure was seen to be "clear, severe, extensive, and of long duration."[304]

The state's new finance formula would be required to provide sufficient funding so that per pupil expenditures in urban districts of less wealth that were nearly the same as those of suburban districts of greater wealth, and the special disadvantages of students in urban schools required addressing.[305] The new financing system could not rely on the taxing ability of local districts.[306] The court's remedy was limited to urban districts with little wealth, and did not treat the other educational disparities in the state. The state's minimum aid program was found to be unconstitutional; all districts were allocated funding even if their wealth were great. This was seen by the court to be counter-equalizing.[307] The court stated that $440 million would have been necessary during this year to guarantee provision of a "thorough and efficient" education of the twenty-eight poorest districts and so ordered more funding only for those districts.[308]

Not all cases during the third wave conform to the general trend of pro-reform decisions based on education clauses. In Kukor v. Grover,[309] a decision announced three weeks after Helena, the Wisconsin Supreme Court upheld the constitutionality of the school finance system of Wisconsin.[310] In response to claims of a violation of equal protection, the court applied a rational basis standard, because the case dealt with spending disparities alone and not complete denial of educational opportunity.[311] Funds for specialized programs to meet the needs of impoverished students were not covered by considerations of uniformity.[312]

In Thro's analysis, the Kentucky, Texas, and Montana cases are different from those which came before because of the sole reliance on the education clause.[313] These were the first decisions since Dupree v. Alma School District No. 30 of Crawford County[314] in 1983 to hold that school finance reform was required.[315] Before 1989, there was great resistance to findings of mandate for reform on the basis of equal guarantee clauses. Even, said Thro, if the majority wanted to overturn, courts had little choice except to reluctantly uphold systems. But, in his view, the three 1989 decisions constitute a sufficient precedent.[316] State courts will show growing awareness of decisons from other states which involve interpretations of education provisions with nearly identical language and will probably feel compelled to explain their reasons if decisions are not the same as in other states.[317]

Capital Outlay

Over the last several decades, a history of court cases directing attention to capital outlay funding has been created.[318] These cases have involved issues of equity and equal opportunity, as defined by state education article language and equal protection guarantees. Reliance on property taxes, often a point of attack for finance reformers, is never so great as in capital outlay.[319]

Though some have recognized the potential vulnerability of many programs if challenged on equity grounds for their capital outlay funding procedures, facility finance concerns have not been as high as those for general expenditures, because of lack of perception of linkage between facilities and instructional programs, increasing direct instructional priorities, fears of encroaching on local choice, and assumptions that equity principles do not apply to capital outlay.[320] Yet, several cases have dealt with capital outlay as an equity issue.

In the last two decades, numerous courts have discussed capital outlay funding procedures. In Serrano II,[321] the court spoke of the substantial advantage in obtaining "high-quality buildings" accruing to high-wealth districts because of unacceptable disparities in expenditure between districts.[322] The court also noted that

> The effect of disparities in district wealth also continues to be felt in the area of capital outlay...wealthier districts, being generally able to generate sufficient funds for capital outlay purposes within their bonding capacities, are often not required to levy permissive override taxes for the repayment of state aid loans, which is the only source of assistance for districts whose bonding capacity is insufficient to finance needed capital improvements.[323]

In Serrano III,[324] the court expressed concern at a deferred maintenance program that had allowed some buildings to deteriorate for as many as fifteen years, and questioned the use of a statewide average, which "makes no sense and virtually assures inequity," to determine allocations for this purpose, when needs varied dramatically from district to district.[325] The court did not, however, include deferred maintenance funds in its equity analysis.[326]

In Board of Education of the City of Cincinnati v. Walter[327] it was noted that a system that is thorough and efficient must not be starved for funds, buildings, equipment, or teachers.[328] The court found a connection between cramped facilities and meager financial resources.[329] In Washakie County School District v. Herschler,[330] the Supreme Court of Wyoming found that the funding of school construction should include statewide resources.[331] In Lujan v. Colorado State Board of Education,[332] the court found that high-wealth districts could raise more revenue from the 4 mill statutory maximum than could low-wealth districts, and gave as an example a high-wealth district that could raise $386.52 per pupil and a low-wealth district that could only raise $23.60 per pupil.[333] The statutory debt ceiling allowed the top 10 percent of districts to generate $184.50 per pupil for the Bond Redemption Fund, wheras the lowest 10 percent of districts averaged only $98.44 per pupil.[334] The court found, however, no violation of equal protection by the capital outlay finance procedure, because it was rationally related to the legitimate state purpose of public debt control.[335]

Facilities played a significant role in the series of cases that began with Pauley v. Kelly[336] in 1979. The trial court judge had found that inadequacies in physical plant posed potential threats to student health and welfare.[337] The West Virginia Supreme Court stated that good facilities were implicit in the requirement for a thorough and efficient education.[338] The case was remanded to Judge Arthur Recht.[339]

Judge Recht found that the "thorough and efficient" and equal protection clauses of the West Virginia Constitution were violated by the public schools.[340] He commented on the standards for facilities:

> [A]ll facilities must be structurally safe, contain fire safety measures, sufficient exits and stairways for safe and easy flow of traffic, an adequate, safe and portable water supply, an adequate sewage disposal system, sufficient and sanitary toilet facilities and plumbing fixtures, and adequate general instructional,

> administrative, and custodial storage. All facilities must be adequately lighted, in good repair, and attractively painted. Facilities must be designed to prevent loud noises from traveling from one section of the building to another.[341]

Specifications were detailed. They included art rooms for each 350 to 400 children and 25 percent of classroom space to be used for storage.[342]

Judge Recht had also specified that a commissioner be appointed to create a master plan for executing the order of the court.[343] A Master Plan was created by an advisory committee to the State Board of Education.[344] It contained several pages of requirements for facilities, and required evaluation of existing facilities and submission of a yearly plan for facility improvement by each school system.[345] But, according to Smith and Zirkel, little has been done to achieve progress in meeting the master plan standards.[346]

The Supreme Court of New Jersey, in Abbott v. Burke,[347] dealt extensively with capital outlay concerns. In the series of litigations prior to Abbott, Robinson v. Cahill,[348] the court had stated that "[t]he state's obligation includes as well the capital expenditures without which the required educational opportunity could not be provided."[349]

In 1985, the court, in an earlier decision in the Abbott v. Burke series of cases, had been influenced by plaintiff allegations of extensive physical plant deterioration and claims of relatively higher operating costs (because of maintainence, asbestos surface treatment, and higher heating costs in aging, less energy-efficient facilities) to include these "inputs" in assessing their constitutional claims.[350] The Court directed the Administrative Law Judge to develop a record of testimony sufficient for the court's analysis.[351]

The Administrative Law Judge (ALJ) found a strong relationship between disparities in student input and wealth.[352] Particular concern was expressed regarding facilities:

> It is quite obvious on this record that facilities present a statewide problem. Besides the differences in the quality of school facilities between poor urban districts and wealthy districts, our school facilities generally need modernization...Similarly, I do not believe that widely differing physical plants can be justified on an equal protection basis...I FiND that a more systematic way of dealing with replacing and renovating outmoded physical plants should be incorporated into the financing system.[353]

The Commissioner rejected the ALJs recommendations, and the assertion of strong correlations between wealth and per pupil expenditure.[354]

In a 1990 decision in Abbott v. Burke, the Supreme Court of New Jersey treated capital outlay more extensively than it had previously. Capital construction needs in the state were so great (estimated at three billion for a complete upgrade)[355] that the state had admitted that the current system was not sufficient to meet the need; yet the state had argued that this unmet need did not affects its contention that a "thorough and efficient" education was being delivered statewide.[356] The court, however, asserted that "[a] thorough and efficient education also required physical facilities."[357] Explicit descriptions of problems with facilities were given. In one Jersey City schools, the bathrooms had no hot water, and cracks in the facade had caused water damage inside the building.[358] In another school, computer classes were being held inside of storage closets.[359]

The court summed up the situation:

> Many poorer urban districts operate schools that, due to their age, are crumbling. These facilities do not provide an environment in which the children can learn; indeed, the safety of children in these schools is threatened. For example, in 1986 in Paterson a gymnasium floor collapsed in one school, and in another school the entire building was sinking.[360]

The court continued with accounts of schools in which remedial classes were taught in converted bathrooms and coal bins, and other schools with no cafeteria (with children eating lunch in the corridors).[361] But this was not true everywhere:

> In contrast, most schools in richer suburban districts are newer, cleaner, and safer. They provide an environment conducive to learning. They have sufficient space to accommodate the children's needs now and in the future. While it is possible that the richest of educations can be conferred in the rudest of surroundings, the record in this case demonstrates that deficient facilities are conducive to a deficient education.[362]

The court, though extremely concerned with this situation, found the information insufficient for it to fashion an effective remedy for deficiencies in facility conditions and capital construction.[363] The correction would be a "massive undertaking," requiring precise information about deficiencies and cost of correction. But the court delivered a warning:

> It is obviously a matter best suited for legislative treatment, but if squarely presented to us with an adequate record of need and legislative failure, we would be obliged under the Constitution to consider the matter.[364]

In Jenkins v. Missouri,[365] the Supreme Court upheld a lower court judgement which included provisions for $150 million in capital improvement bonds to correct serious facility problems. In 1985, the district court had required substantial action to correct facility conditions in the schools of Kansas City.[366] The average age of the sixty-eight school buildings in the Kansas City Metropolitan School District (KCMSD) was fifty-eight years.[367] The court found that

> [t]he current condition of the 68 school facilities adversely affects the learning environment and serves to discourage parents who might otherwise enroll their children in the KCMSD...the deteriorating conditions include safety and health hazards, educational environment impairments, functional impairments, and appearance impairments...[t]he improvement of school facilities is an important factor in the overall success of this desegregation plan. Specifically, a school facility which presents safety and health hazards to its students and faculty serves both as an obstacle to education as well as to maintaining and attracting non-minority enrollment. Further, conditions which impede the creation of a good learning climate, such as heating deficiencies and leaking roofs, reduces the effectiveness of the quality education conditions of this plan.[368]

The state argued against the adoption of a comprehensive facility improvement plan on the grounds that facility conditions were not traceable to segregation, that bad conditions were due to failure of KCMSD to maintain properly, that capital outlay improvements were not necessary for the increase of educational quality specified in the desegregation plan, and that the estimates for the costs of these facility enhancements were excessive. The court rejected these arguments, asserting that the state was responsible for remedying segregation's vestiges and implementing a desegregation plan that would attract non-minority students.[369]

After an initial plan of remediation focusing on eliminating safety and health hazards, creating a comfort level facilitating a good learning climate, and improving facility attractiveness, to be financed by both KCMSD and the state, the court stated that it would "review other capital improvements needed in order to bring its facilities to a point comparable to facilities in neighboring suburban school districts."[370] The Eighth Circuit Court of Appeals upheld most of the elements of this program in 1986,[371] but required an equal division of financing between the state and KCMSD.[372] The district court then reallocated the proportion of payment to 25 percent for KCMSD and 75 percent for the state.[373] Additionally, the court adopted a proposal that all high school and middle schools, together with half the elementary schools, be converted in to magnet schools by 1991-1992.[374] Several months later, the district court increased the property tax levy from $2.05 per $100 to $4.00 per $100.[375]

In 1988, the Eighth Circuit Court reiterated its requirement for strong state participation in the capital outlay program.[376] In the future, however, the court asserted that the district court should allow KCMSD to set its own levy and submit it to state authorities, establishing the maximum and enjoining provisions in state law that would prevent KCMSD from raising the money for constitutional violation remedies.[377]

ln 1990, the Supreme Court ruled that the Court of Appeals had the authority to order KCMSD to raise taxes to fund its portion of the desegregation program, although a tax increase required by the district court was overturned.[378] The Court held that the district court did not commit an abuse of its discretion in requiring KCMSD to fund its portion of the remedy.[379] The Court thus reaffirmed the power of federal courts to order taxation for remedy of desegregation.[380]

In 1989, the Supreme Court of Montana declared the Montana educational system unconstitutional.[381] In the original trial, a "Study Team" of educational experts had found, in a comparison of pairs of schools from richer and poorer districts, that the schools in districts with more wealth had greater ability to maintain facilities than those in poorer districts.[382] A second specialist found that high expenditure districts had not had to defer maintenance due to fund shortages, as had lower districts.[383] The district court had also found that accreditation standards, including those that established minimum size, maintenance, and safety standards for facilities, did not define a quality education (the Montana Board of Education objected to this finding).[384]

Methods for funding school construction were part of the required total reorganization of the Kentucky system in Rose.[385] The trial court had stated that an efficient school system was required to provide sufficient physical facilities.[386] Numerous witnesses had testified before the trial court that there were large disparities between affluent and poor districts in condition and adequacy of physical plant.[387] The Supreme Court of Kentucky made it clear in declaring the entire system of common schools unconstitutional that the decision was to be applied to the "entire sweep of the system," and covered school construction and maintenance.[388]

The Texas State Supreme Court discussion in Edgewood v. Kirby focused on lack of specific state minimum requirements for the cost of school facilities and debt service.[389] Capital outlay was underfunded, and local monies were utilized to pay construction bond debt while districts with high wealth could create enrichment programs. The Court stated:

> ...the Foundation School Program does not cover even the cost of meeting the state-mandated minimum requirements. Most importantly, there are no Foundation School Program allotments for school facilities or for debt service. The basic allotment and the transportation allotment understate actual costs, and the career ladder salary supplement for teachers is underfunded. For these reasons and more, almost all school districts spend additional local funds. Low-wealth districts use a significantly greater level of their local funds to pay the debt service on construction bonds while high-wealth districts are able to use their funds to pay for a wide array of enrichment programs.[390]

More cases that are not reaching the highest courts are also dealing with capital outlay in a more substantive way than was true previously. Christiensen v. Graham, a Florida case, involved capital outlay issues.[391] A recent Florida case focused on impact fees.[392] Two Alaska cases, Matanuska-Susitna Burroughs v. State of Alaska and Kenai Peninsula Burrough and Jerry Anderson v. State of Alaska were the first cases based on capital outlay issues.[393] Currently, litigation with capital outlay ramifications is occuring in Minnesota, Washington, Alabama, and Pennsylvania.

In the plaintiffs' trial brief for a current Minnesota case, it was alleged that the debt service levy, a major source of capital outlay funds for Minnesota, is unequalized, with no state funding. Therefore, it favors districts with high wealth. A comparison of the highest and lowest deciles according to wealth per pupil demonstrates that 1.5 mills in the wealthiest decile will yield as much in taxes as 9.1 mills in the least wealthy decile. Plaintiffs claim a violation of the equal protection guarantee of the Minnesota constitution.[394]

Plaintiffs' petition in a Pennsylvania case extensively contrasted schools with excellent and poor facilities. Poor facilities were described in detail with terms such as "inadequate auditorium...hazardous football field...no outdoor or playground facilities...asbestos roof with falling tiles...large cracks in the building's foundation...no faculty rooms".[395]

Plaintiffs in a Alabama action argued that state accreditation standards defined a floor of adequacy. These standards for school administration acknowledged that "[a]dequate facilities and a pleasant environment in a school are essential to promote learning, to maintain high instructional standards, maintain morale, and to achieve the purposes of the school." Accreditation standards required schools to have media center spaces and science rooms with running water. Plaintiff schools were characterized as "grossly inadequate and inappropriate for their educational purpose."[396]

In a current Washington case, plaintiff claimed that "adequate funding of necessary and appropriate facilities...are (sic.) requisite aspects of a general and uniform system of the public schools." Plaintiff asserted

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that the state constitution required that all funding of facilities construction must be from state sources, and that local levies were impermissible.[397]

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155. Webb, McCarthy, and Thomas, Financing Elementary and Secondary Education, 203.

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157. Lee A. Shiver, "A Historical Review of the Development of Florida's School Finance Plan and the Fiscal Equalization Effects of the Florida Education Finance Program" (Ph.D. diss., University of Florida, 1982), 25.

158. Ibid., 50.

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161. Ibid., 65.

162. Ibid., 67.

163. Candice A. King and James L. Carpenter, "Florida Educational Fixed Capital Outlay Budgeting," paper presented at the annual meeting of the American Educational Research Association, Los Angeles, California, 13-17 April 1981. ERIC, ED 203519, 1.

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175. Joan L. Curcio, James W. Longstreth, and Michael S. Rao, "State Provisions for Capital Outlay Funding in Florida: A Help or Hindrance in Meeting Population Growth Demands," Journal of Education Finance 13 (Spring 1988): 350.

176. Ibid., 350.

177. Fla. Stat. sec. 235.435(2)

178. Fla. Stat. sec. 235.435(3).

179. Florida Department of Education, "Capital Outlay Manual," 25.

180. Fla. Const. art. XII, sec. 9(d)(3)

181. Id.

182. Fla. Const. art. XII, sec. 9(d)(8)(c)

183. Curcio, Longstreth, and Rao, "State Provisions," 351.

184. Fla. Stat. sec. 235.15

185. Fla. Stat. sec. 235.18

186. Florida Department of Education, "Capital Outlay Manual," 15.

187. Ibid., 16.

188. Ibid., 17.

189. Ibid., 17-18.

190. Ibid., 18.

191. Fla. Const. art. VII, sec. 9

192. Fla. Stat. sec. 236.31

193. Fla. Stat. sec. 236.25(2)

194. Fla. Stat. sec. 236.35

195. David C. Thompson, "School Finance and the Courts: A Reanalysis of Progress," West's Education Law Reporter 59 (June 21, 1990): 945.

196. William Thro, "To Render Them Safe: The Analysis of State Constitutional Provisions in Public School Finance Reform," Virginia Law Review 75 (November 1989): 1639-1679.

197. William Thro, "The Third Wave: The Impact of the Montana, Kentucky, and Texas Decisions on the Future of Public School Finance Reform Legislation," Journal of Law & Education 19 (Spring 1990): 223.

198. 411 U.S. 1, 93 S. Ct. (1973).

199. Thro, "The Third Wave," 224-5.

200. 790 P.2d. 684 (Mont. 1989).

201. 790 S.W.2d. 186 (Ky. 1990).

202. 777 S.W.2d. 291 (Tex. 1989).

203. Thro, "The Third Wave," 233.

204. William E. Sparkman, "School Finance Challenges in State Courts," in The Impact of Litigation and Legislation on Public School Finance, ed. Julie K. Underwood and Deborah A. Verstegen (New York: Harper & Row, 1990), 199.

205. 347 U.S. 483, 74 S. Ct. 686 (1954).

206. Id. at 493. Manteuffel suggests that Brown appeared to imply that education was a fundamental or protected right, requiring equality in education. Robert L. Manteuffel, "The Quest for Efficiency: Public School Funding in Texas," Southwestern Law Journal 43 (May 1990): 1120-1.

207. 334 F.Supp 870 (Minn. 1971).

208. 310 F.Supp. 572 (Va. 1969).

209. 89 S. Ct. 1197.

210. Thro, "Third Wave," 220.

211. 293 F.Supp. 327 (Ill. 1968), aff'd as McInnis v. Ogilvie, 89 S.Ct. 1197.

212. Id. at 331.

213. Id.

214. Van Dusartz, 334 F.Supp 870 at 877.

215. 487 P.2d. 1241 (Cal. 1971).

216. Id. at 1263.

217. Id.

218. Webb, McCarthy, and Thomas, Financing Elementary and Secondary Education, 258.

219. William E. Camp and David C. Thompson, "School Finance Litigation," Journal of Education Finance, 14 (Fall, 1988): 222.

220. Rodriguez, 411 U.S. 1 at 6.

221. Id. at 47-55.

222. Id. at 35-40.

223. Thro, "To Render Them Safe," 1653.

224. Thro, "Third Wave," 224-5.

225. 106 S.Ct. 2932 (1986).

226. Id. at 2934. According to Underwood and Verstegen, the language of Papasan constituted a narrowing of the Rodriguez ruling - not all funding variations were validated, and if no rational relationship to legitimate state interests existed, equal protection violations were possible. Julie K. Underwood and Deborah A. Verstegen, "School Finance Challenges in the Federal Courts: Changing Equal Protection Analysis," in The Impact of Litigation and Legislation on Public School Finance, ed. Julie K. Underwood and Deborah A. Verstegen (New York: Harper & Row, 1990): 182.

227. 457 U.S. 202, 102 S. Ct. 2382 (1982).

228. Id. at 2398.

229. Thompson, "School Finance," 950-1. However, the effect has been limited; the "heightened scrutiny" standard of Plyler was not applied in Kadrmas v. Dickinson Public Schools, 108 S. Ct. 1281 (1988), a case in which the state was found to be not responsible for transportation costs, and the court reiterated that public education was not a fundamental right, Id. at 393. See also R. Craig Wood, "Kadrmas v. Dickinson Public Schools: A Further Retreat from Equality of Education Opportunity," Journal of Education Finance, 15 (Winter 1990): 429-36.

230. Thro, "Third Wave," 228-230.

231. Thro, "Third Wave," 230.

232. Thro, "To Render Them Safe," 1646.

233. Sparkman, "School Finance Challenges," 193. Radner notes that almost every state constitution has a provision with similarities to the federal equal protection clause. Gershon M. Radner, "A New Legal Duty for Urban Public Schools: Effective Education in the Basic Skills," Texas Law Review 63 (February 1985): 845.

234. Thro, "Third Wave," 230.

235. Ibid.

236. Radner, "New Legal Duty," 846. Pure equal protection analysis tends to favor the defendant - Underwood and Verstegen found that of seven states that applied federal equal protection doctrine without the use of independent state claim analysis, six systems were found constitutional (all except Wyoming). Underwood and Verstegen, "School Finance Challenges," 201.

237. Thompson, "School Finance," 946.

238. Webb, McCarthy, and Thomas, "Financing Elementary," 251.

239. Thro, "To Render Them Safe," 1675.

240. Serrano, 487 P.2d. at 1258-1259. In Thompson's analysis, the plea for a fundamental right to education is based on other fundamental rights - the right to an adequate education, to participate in government and be a contributing force to economic productivity. Thompson, "School Finance," 952. In this view, functional competencies are rigorously defined and resources linearly related to outcomes; inhibition of individual rights and

responsibilities because of resource disparity is demonstrated.

241. Underwood and Verstegen, "School Finance Challenges," 208.

242. Thompson, "School Finance," 948.

243. Thompson, 954.

244. Sparkman, "School Finance Challenges," 214.

245. Gershon M. Ratner, "A New Legal Duty for Urban Public Schools: Effective Education in Basic Skills," 63 Tex. Law Rev. 777, at 814.

246. Ibid.

247. 62 N.J. 473, 303 A.2d. 273.

248. Manteuffel, "Quest for Efficiency," 1122.

249. 303 A.2d. at 284.

250. Id. at 295.

251. 62 N.J. 472, at 520.

252. Id. at 480. The court, says Manteuffel, wanted to avoid the expansion of state equal protection doctrine to the degree that the state constitution would require equal protection spending for every government purpose. This, he suggests, is the reason that most state courts have not followed Serrano. Manteuffel, "Quest for Efficiency," 1122-1123. In Sparkman's view, equal protection was seen to be unmanageable in New Jersey because of operative concepts such as compelling interest, fundamental right, and suspect class. Sparkman, "School Finance Challenges," 211.

253. Thro, "To Render Them Safe," 1678.

254. Camp and Thompson, "School Finance Litigation," 222.

255. 255 S.E.2d. 859, 877 (W.Va. 1979).

256. Id. at 878.

257. Id.

258. Id. at 877.

259. Id.

260. 324 S.E.2d. 128 (1982).

261. Camp and Thompson, "School Finance Litigation," 229.

262. Ibid.

263. Radner, "New Legal Duty," 817.

264. Ibid.

265. Thro, "Third Wave," 226.

266. Radner, "New Legal Duty," 814.

267. Ibid., 822.

268. Ibid., 821.

269. Ibid., 814-816. Thro comments on the judicial effectiveness of these categories. Category 1, imposing a minimal obligation, a system of free schools and nothing more, has been useless as a reform vehicle; all challenges have been rejected. Category 2, requiring certain minimal standards, such as thorough and efficient, has produced major plaintiff victories (Robinson, Rose, Helena, and Edgewood), but also even more defeats. Category 3 cases have more purposive language and stronger preambles; no state court has interpreted a Category 3 case so far. Category 4, placing the greatest obligation with language suggesting that education is primary, paramount, and fundamental, has resulted in rejected challenges in all except one case (Northshore School District No. 417 v. Kinnear, 530 P.2d. 178 (Wash. 1974), the only case besides the ones mentioned in Category 2 to be decided purely on the education clause). Thro, "To Render Them Safe," 1657-67.

270. Sparkman states that courts in thirteen of fourteen states using the standard of rational relationship found their systems constitutional, but four invoking strict scrutiny ruled their systems invalid. He adds that of five cases brought under the education article, three systems had been ruled invalid and two valid. Sparkman, "School Finance Challenges," 216. Camp and Thompson found that by 1988 nineteen decisions had been reached in the highest courts of their states - twelve upholding constitutionality, and seven ruling the formulas unconstitutional. Camp and Thompson, "School Finance Litigation," 226. At the end of 1989, Thro counted ten victories for plaintiff (including Rose,

Edgewood, and Helena) and fourteen defeats. Thro, "To Render Them Safe," 1642.

271. Thro, "Third Wave," 232.

272. Ibid., 231-2.

273. 769 P.2d. 684 (Mont. 1989).

274. Id. at 690.

275. Id.

276. Id. at 691.

277. Id. at 689-690.

278. Id. at 690.

279. 790 S.W.2d. 186 (Ky. 1990).

280. Id. at 189.

281. Id. at 215.

282. Id. at 191-194.

283. Id. at 206. Chief Justice Stephens cited constitutional evidence that the most important function of state and local government was education. The opinion described an efficient system of schools as one that was tax supported, with coordinated organization, and which provided adequate and free education to all students of the state, without regard to geographical location or local fiscal resources. The court reviewed the history of financing in the state. The per capita expenditure system had been replaced with a Minimum Foundation Program based on a real property tax and a Power Equalization Program to help limit disparities; however, the legislature minimized the intended effects through legislation. Id. at 190, 194-196, 211.

284. Id. at 197.

285. Id. at 198.

286. Id. at 212.

287. Id. at 211.

288. 777 S.W.2d. 391 (Tex. 1989).

289. Id. at 392.

290. Id. at 391.

291. Id. at 392.

292. Id.

293. Id. The court saw a cycle of poverty. Property-poor districts were forced to impose higher taxes than others, then received a lesser quality of education for their efforts. Choice of location for new industry and development related in a significant way to tax rates and quality of local schools. Poor districts could not bring in new industry and thereby augment their tax base. Id. at 393.

294. Id.

295. Id. at 395.

296. Id. at 394-7.

297. Id. at 397.

298. Id.

299. Mary Jane Connelly, "Recent Developments in School Finance Litigation: The Kentucky and Texas Cases," Educational Considerations 17 (Spring 1990): 25. In Walker's analysis, Edgewood v. Kirby emphasized adequacy, in terms of support by the state, defining it as resource inputs in large enough quantity to ensure desired outcomes. In Walker's view, the court upheld an expenditure equality standard together with a fiscal neutrality standard imposed by the principle of equal yield; additional local monies were required to be a matter of choice, not necessity brought on by lack of equalization. There was an implicit connection between equality and efficiency, in that substantial equality of available expenditures must result from the formula, and variance in wealth of districts must be mitigated by the state. Horizontal tax equity, equal incidence of taxes for taxpayers with the same taxpaying ability, was directly addressed by the court. The state aid, consisting of a two-tiered foundation program with equal yield per weighted pupil based on effort, did not require much reform; it was fiscally neutral. Lack of inclusiveness was the problem. The state supported equalized program was too low in comparison to the total educational expenditures, so that local wealth reliance became a necessity. Billy D. Walker and John D. Thompson, "Special Report: The Texas Supreme Court and Edgewood L.S.D. v. Kirby," Journal of Education Finance 15 (Winter 1990): 421-3. Sparkman found that the court's concept of efficiency did not require distributions on a per capita basis, but did mandate

substantially equal access to revenues of similar magnitude at the same level of tax effort. The state was allowed to recognize special needs or cost differentials, but local enrichment was required to derive from tax effort of the locality. William E. Sparkman and Michael P. Stevens, "Texas School Finance System Unconstitutional," West's Education Law Reporter, 57:338.

300. 575 A.2d. 359 (N.J. 1990).

301. Id. at 363.

302. Id.

303. Id.

304. Id. at 408. The court did not accept the argument that better management, not greater financial allocation, was required to improve urban schools. Money alone had not been totally effective, but that does not prove that expenditures made no difference. New Jersey had a greater per pupil expenditure than any other states, but must further increase this allocation, for pupils in the poorer districts have too long awaited a system of funding that will equalize their opportunity level with those children in rich districts. Id. at 406, 412.

305. Id. at 363.

306. Id.

307. Id. at 406-7.

308. Id. at 408-9.

309. 148 Wis.2d. 469, 436 N.W. 2d 568 (Wisconsin, 1989).

310. Id. at 487.

311. 436 N.W.2d. at 580.

312. Id. at 585.

313. Thro, "Third Wave," 222.

314. 651 S.W. 90 (Ark. 1983.)

315. Thro, "Third Wave," 238.

316. Ibid., 242.

317. Thro, "Third Wave," 248-249. Thro classifies Florida as a Category 2 state, even though thorough and efficient language is not specifically used. Although Category 2 language is somewhat minimal, Thro notes that all of the major third wave cases were based on Category 2 language, but that most cases brought under this category of constitutional language have failed. Ibid., 244; Thro, "To Render Them Safe," 1663-1665.

318. R. Craig Wood and Robert W. Ruch, "A Reexamination of Capital Outlay Distribution in Indiana," Journal of Education Finance 13 (Winter 1988): 254.

319. Wood and Ruch, "A Reexamination," 254.

320. Thompson, Stewart, and Honeyman, Achievement of Equity in Capital Outlay Financing, 24.

321. 135 Cal.Rptr. 345

322. Id. at 355.

323. Id. at 353-354.

324. 226 Cal.Rptr. 584.

325. Id. at 597.

326. Id. at 610.

327. 390 N.E.2d. 813 (Ohio 1979).

328. Id. at 825.

329. Id. at 827.

330. 606 P.2d. 310 (1980).

331. Id. at 377.

332. 649 P.2d. 1005 (1982).

333. Id. at 1013.

334. Id.

335. Id. at 1028. Justice Dobofsky, dissenting, stated that "because the levy and debt limitations effectively prevent poorer districts from raising adequate funds for capital expenditures and because the majority enunciates no legitimate state purpose furthered by the limitations, I think they violate equal protection guarantees. In addition,

I conclude that the state's failure to provide any mechanism for mitigating the vast disparities in school districts' abilities to finance capital expenditures...violates the requirement...of the Colorado Constitution that the state provide a thorough and uniform system of education." She added, at 1032, that "other states, faced with similar disparities, have intervened to equalize the capacity of districts to finance capital expenditures...no rational basis exists for the state's failure to intervene." Justice Lohr, at 1040, asserted that "in the capital facilities area 'local control' is merely a euphemism masking gross inequalities in the abilities of school districts to meet their needs."

336. 255 S.E.2d. 859 (W. Va. 1979).

337. Id. at 860.

338. Id. at 877.

339. The judge was well-known for a liberal orientation. Margaret D. Smith and Perry A. Zirkel, "Pauley V. Kelly: School Finances and Facilities in West Virginia," Journal of Education Finance, 13 (Fall, 1988): 265.

340. Pauley v. Bailey, No. 7-1268 (Kanawha County Cir. Ct., W. Va., May 11, 1982).

341. Id. at 14-15.

342. Id. at 21-56.

343. Id. at 236.

344. West Virginia Board of Education, "A Master Plan for Public Education," (1983).

345. Id. at 330.

346. Smith and Zirkel, "Pauley V. Kelly," 271, 273. "Although the trial court retains jurisdiction in the case, little has been accomplished. Meanwhile school facilities continue to deteriorate in West Virginia, and there is little money to take corrective measures beyond maintenance of present facilities and programs. Pauley V. Kelly, the wish of the reformers and selective subject of national attention, thus far has had negligible precedential and practical effect...," 273.

347. 575 A.2d. 359 (N.J. 1990).

348. 303 A.2d. 273.

349. Id. at 297.

350. 495 A.2d. 376 (N.J. 1985).

351. Id. at 376.

352. OAL Docket No. EDU 5581-85, Agency Docket Number 307-8/85.

353. Id. at 601.

354. 575 A.2d. 359, at 364.

355. Id. at 397.

356. 575 A.2d. 359, at 382.

357. Id. at 397.

358. Id.

359. Id. at 395.

360. Id.

361. Id.

362. Id.

363. Id. at 411.

364. Id.

365. 110 S. Ct. 1651 (1990).

366. 639 F.Supp 19 (W.D.Mo. 1985).

367. Id. at 39.

368. Id. at 39-40.

369. Id. at 41.

370. Id. at 41.

371. 807 F.2d. 657 (8th Cir. 1986).

372. Id. at 685.

373. See discussion in 110 S. Ct. 1651, at 1657.

374. Id.

375. Id. at 1658.

376. 855 F.2d. 1295 (8th Cir. 1988).

377. Id. at 1314-5.

378. 110 S. Ct. 1651 (1990), at 1654.

379. Id.

380. Justices Kennedy, O'Conner, Renquist, and Scalia dissented in part. Justice Kennedy stated at 1667 that "[t]oday's casual embrace of taxation imposed by the unelected, life-tenured federal judiciary disregards fundamental precepts for the democratic control of public institutions."

381. Helena v. State of Montana, 769 P.2d. 684.

382. Id. at 687.

383. Id. at 688.

384. Id. at 691.

385. Rose v. Council, 215.

386. Id. at 193.

387. Id. at 198.

388. Id. at 215. The court, indeed, used school facility imagery in describing flawed legislation which still had a positive use: "Just as the bricks and mortar used in the construction of a schoolhouse, while contributing to the building's facade, do not ensure the overall structural adequacy of the schoolhouse, particular statutes drafted by the legislature in crafting and designing the current school system are not unconstitutional in and of themselves. Like the crumbling schoolhouse which must be designed and revitalized for more efficient use, with some component parts found to be adequate, some found to be less than adequate, statutes relating to education may be reenacted as components of a constitutional system if they combine with other component statutes to form an efficient and thereby constitutional system."

389. Edgewood v. Kirby, 392.

390. Id. at 392.

391. Circuit Court, 2d. Judicial Cir. Leon County, Florida, Case No: 86-1390. This case, dismissed in partial summary judgement, involved allegations by plaintiffs that a 1.5 mill discretionary capital outlay levy was disequalizing, and led to an unconstitutional violation of uniformity in the state's educational system. See Reply Brief of Appellants, 5 (June 1, 1988). A projection of potential local capital outlay taxes from the 1.5 mill levy in 1985-86 showed a range of $636.59 per FTE for Collier County and $48.61 for Gadsden County, a difference of $587.98 per FTE for capital outlay purposes in the two counties. "Information Pertaining to Financial Equity Suit, Hillsborough Public Schools," (January, 1986).

392. St. Johns County, Florida, etc. et al., v. Northeast Florida Builders Association, Inc., et. al. No. 75,986. The Supreme Court of Florida allowed the imposition of impact fees for public education.

393. No. 3PA-86-2022 Civil, Superior Court State of Alaska, 3rd Judicial District at Palmes, and No. 3KN-83-422 Civil, Superior Court State of Alaska, 3rd Judicial District at Kenai, in Camp and Thompson, "School Finance Litigation," 235-6. The cases involved different reimbursement levels for rural and urban districts for capital outlay. Ibid., 236.

394. Plaintiffs' Trial Brief, Sheridan and Dianna Skeen, et. al., v. State of Minnesota, et. al., and Virginia Independent School District #706, et. al., No. C7-88-1954., at 10, 16, 17, 77.

395. Pennsylvania Association of Rural and Small Schools, et. al., v. Robert V. Casey and Donald M. Carroll, at 32, 34, 37, 38, 53. Space shortage was so acute in one school that gifted classes were being held in storage closets. Id. at 38.

396. Harper, et. al., v. Hunt. et. al., No. CV 91-0117, at 25, 29.

397. Mark Anders Tronson v. State of Washington, et. al. at 5-7.

CHAPTER III
RESEARCH DESIGN

Introduction

The objective of this research was to determine the relationship of the equity of total capital outlay revenues relative to the equity of general educational expenditures for the most recent year available in Florida, and the relationship of the equity of the state and local components of capital outlay and total capital outlay revenues relative to each other for the most recent year available in Florida. The state of Florida was chosen as the source of data for this analysis because of the major impact of capital outlay on the pattern of total expenditures compared to almost all other states, and for the state policy of attempting to create highly equitable formulas for general expenditure and for capital outlay. Additionally, this state was representative because more effort had been invested in creating a unitary, coherent formula for general expenditures than for capital outlay.

Research Methodology

In this research, equity measures were applied to capital outlay, an area in which there has been little previous examination. Four components of educational spending in Florida were analyzed.

Four revenue and expenditure variables were studied: FEFP, the general educational expenditures for Florida; STATE CAPITAL OUTLAY, state capital outlay and debt service revenues; LOCAL CAPITAL OUTLAY, local capital outlay and debt service revenues; and TOTAL CAPITAL OUTLAY, total capital outlay and debt service revenues. Each variable will be discussed separately. The unit for analysis of the four categories was weighted FTE for each school district.

The first variable (FEFP) for analysis was the aggregate of total dollar value of current operating expenditures, the Florida Educational Foundation Program.[1] The FEFP value is equal to the total gross FEFP, including net state FEFP allocation, seventh period/extended day allocation, prior year adjustments, and required local effort.[2]

The second variable for analysis was the total dollar value of state capital outlay revenues (STATE CAPITAL OUTLAY) for each district. Revenues were used instead of expenditures because they allowed analysis by source (i.e., state versus local). The variable STATE CAPITAL OUTLAY included Capital Outlay and Debt Service Fund revenues, Public Education Capital Outlay revenues, and other capital outlay revenues from the state.

The third variable for analysis (LOCAL CAPITAL OUTLAY) was the total dollar value of local capital outlay revenues. A large majority of capital outlay revenue is raised through local millage, so this revenue is related to property wealth.

The computed value for LOCAL CAPITAL OUTLAY included all revenues received from local government for Debt Service Funds (local property taxes, debt service millage, interest, and revenue received from local government for interest on investments, tax redemptions, and excess fees) and all revenues received from local sources for Capital Projects Funds (district school taxes, interest, and other local income). These categories (local total and state total), as defined by the Florida Department of Education, were used in the study.[3]

The fourth variable for analysis (TOTAL CAPITAL OUTLAY) was the sum of STATE CAPITAL OUTLAY and LOCAL CAPITAL OUTLAY. The use of this variable allowed for comparing equity measures for STATE CAPITAL OUTLAY and LOCAL CAPITAL OUTLAY to those for the entire capital outlay allocation (TOTAL CAPITAL OUTLAY).

Each of these four variables was subjected to equity analysis. The univariate and bivariate/multivariate statistics utilized are listed in Figure 1.

Measures of Equity

Many varieties of equity may be analyzed: students' and taxpayers' equity, horizonal equity (equal treatment of equals) and vertical equity (unequal treatment of unequals), equal opportunity, input and output equity, *ex post* and *ex*

LIST OF EQUITY STATISTICS UTILIZED

UNIVARIATE

- Range
- Restricted Range
- Federal Range Ratio
- McLoone Index
- Relative Mean Deviation
- Standard Deviation
- Coefficient of Variation
- Interquartile Analysis

BIVARIATE/MULTIVARIATE

- Correlation Coefficient
- Slope (Regression Coefficient)
- Elasticity
- Gini Coefficient
- Lorenz Curve

Figure 1: Summary of Equity Analysis Procedures.

ante fiscal neutrality standards.[4] This study focused on horizontal equity for students, and equal opportunity, using fiscal neutrality of expenditures as a measure. Horizontal equity is measured by statistics that reflect spread or dispersion of values in a distribution, such as the range, the restricted range (fifth to 95th percentile), the Federal Range Ratio (the restricted range divided by the fifth percentile value), the relative mean deviation, the McLoone Index (the ratio of all the summed values below the median and the total of all if funded at the median level), the variance, and the coefficient of variation.

Equal opportunity analysis examines the relationship between district wealth and expenditures; regression measures (correlation coefficients, slopes, and elasticities) are used to accomplish this. Fiscal neutrality is further explored by use of the Gini Coefficient (the ratio of the area between the Lorenz Curve and a line representing leveled expenditures), and the Lorenz Curve (a comparison between percentages of expenditure and percentages of pupils after districts are sorted on a wealth measure).

Range

The range is the difference between a distribution's highest and lowest values. The smaller the range, the less the disparity and the greater the equity. The range has several limitations as a measure; it has been referred to as the "least accurate measure available."[5] It is based on the extremes in the distribution, and is not sensitive to

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shifts within the distribution.[6] The formula used for the range calculation was:

$$\text{Range} = \text{Highest } X_i - \text{Lowest } X_i$$

where X_i = mean of expenditures or revenues (depending on the variable) per weighted FTE in district i.[7]

Restricted Range

The restricted range is the difference between the 5th and 95th percentiles in a distribution. The less the difference, the greater the equity. The advantage of the restricted range over the range is that it examines values that are more representative.[8] The formula used to calculate the Restricted Range was:

$$\text{Restricted Range} =$$

x_i (at or above which 5 percent of weighted FTE lie) -
x_i (at or below which 5 percent of weighted FTE lie)
where X_i = mean of expenditures or revenues (depending on the variable) per weighted FTE in district i.[9]

Federal Range Ratio

The Federal range ratio is the restricted range divided by the value of the distribution at the fifth percentile.[10] The smaller the value, the greater the equity. The Federal range ratio is not sensitive to equal percentage increases in the distribution (as might be caused by inflation). It is also not sensitive to shifts in the distribution, because it measures two fixed points near the ends.[11] The formula used to calculate the Federal Range Ratio was:

Federal Range Ratio = Restricted Range/x_i (at or below which 5 percent of weighted FTE lie)
where X_i = mean of expenditures or revenues (depending on the variable) per weighted FTE in district i.[12]

McLoone Index

The McLoone Index is the ratio of the actual values below the median, summed, and the total of values below the median if all values were at the median. In public school finance studies, it measures the amount of revenue required to raise the lower half to the state median. The closer the value to 1.0, the greater the equity.[13] Unlike the coefficient of variation, the Lorenz curve, the standard deviation, and the Gini coefficient, it is not concerned with the distribution of all data, and would be of less use to those who would emphasize equal education for all, rather than a floor of basic education for those at the lower end.[14] The formula used to calculate the McLoone Index was:

$$\text{McLoone Index} = [\text{SUM } P_i\ X_i]/[M_p\ \text{SUM } P_i]$$

where district i is below M_p (the median expenditures or revenues per weighted FTE for all weighted FTE), P_i is the number of weighted FTE in district i and X_i = mean of expenditures or revenues (depending on the variable) per weighted FTE in district i.[15]

Relative Mean Deviation

The relative mean deviation is the absolute value of the differences of each value from the mean, summed, and divided by the total of all values in the distribution.[16] The smaller the value, the greater the equity. The formula used to calculate the Relative Mean Deviation was:

Relative Mean Deviation = $[\text{SUM } (P_i \; |X_p - X_i|)]/X_p \; (\text{SUM } P_i)$

where P_i = number of weighted FTE in district i; X_p = mean expenditures or revenues per weighted FTE for all weighted FTE; and X_i = mean of expenditures or revenues (depending on the variable) per weighted FTE in district i.[17]

Standard Deviation

The standard deviation is a measure of disbursement of data about the mean. In a normal, bell-shaped distribution, approximately two-thirds of the values in the distribution will fall within one standard deviation from the mean in each direction, and about 95 percent within two standard deviations.[18] The formula used to calculate the Standard Deviation was:

Standard Deviation = $\text{SQRT } [\; [\text{SUM } (P_i \; (X_p - X_i)^2]/X_p \; (\text{SUM } P_i)]$

(which is equal to the square root of the variance)

where P_i = number of weighted FTE in district i; X_p = mean expenditures or revenues per weighted FTE for all weighted FTE; and X_i = mean of expenditures or revenues (depending on the variable) per weighted FTE in district i.[19]

Coefficient of Variation

The coefficient of variation is the square root of the variance (standard deviation) divided by the distribution's mean. A decreasing value indicates increasing equity.[20]

Unlike the standard deviation and the range, it is not overly sensitive to scale changes.[21] The formula used to calculate the Coefficient of Variation was:

$$\text{Standard Deviation}/X_p$$

where X_p = mean expenditures or revenues per weighted FTE for all weighed FTE.[22]

Interquartile Analysis

Interquartile analysis is the analysis of means and distributions for quartiles of wealth and expenditure.

Correlation Coefficient

The correlation coefficient, in public school finance analysis, measures the relationship between a wealth measure and a revenue measure. The higher the coefficient (up to 1.00), the stronger the relationship between wealth and expenditure and the greater the inequity; conversely, the lower the value (down to .00), the less the relationship and the greater the equity. The square of the correlation coefficient indicates the amount of variation in one variable associated with another variable's variation.[23]

Regression Coefficient

The regression coefficient is the slope of the regression line relating wealth and expenditures. It can measure the difference that a change in tax rate, or wealth, can have on expenditures.[24]

Elasticity

The elasticity, which is the product of the slope and the ratio of the mean of the variables, measures the percentage of change in one variable that is associated with a percentage of change in the other variable.[25] The elasticity converts the raw change in variables described by the regression coefficient to comparisons based on portions of the whole variables.

Gini Coefficient

The Gini coefficient measures how close the variable distribution is to providing a specific percentage of the population with that same percentage of the variable. The smaller the value, the greater the equity.[26] The Gini coefficient is widely used in measuring per-capita inequality.[27] The formula for the Gini Coefficient was:

$$\text{Gini Coefficient} = [\text{SUM SUM } P_i\ P_j\ |X_i - X_j|]/2(\text{SUM } P_i)^2\ X_p$$

where P_i = number of weighted FTE in district i; X_p = mean expenditures or revenues per weighted FTE for all weighted FTE; and X_i = mean of expenditures or revenues (depending on the variable) per weighted FTE in district i.[28]

Lorenz Curve

The Lorenz curve graphically describes a comparison between percentages of a variable and percentages of a population. It is the graphical representation of the Gini coefficient. The Gini coefficient is calculated by dividing the area between the 45 degree line on the graph of the

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Lorenz curve and the Lorenz curve itself by the area beneath the 45 degree line.[29]

Correlation and Regression Measures

Correlation and regression measures, discussed individually previously, were used to establish the relationship of property wealth per weighted full time equivalent student (ROLL/WFTE) and each of the four variables that were the subject of analysis. The relationship was considered to conform to the linear model, as expressed in the equation

$$Y_i = A + BX_i + E_i$$

where Y_i is the value of the dependent variables, the capital outlay revenues per weighted pupil (LOCAL CAPITAL OUTLAY/WFTE, STATE CAPITAL OUTLAY/WFTE, and TOTAL CAPITAL OUTLAY/WFTE) and the general educational expenditures per weighted pupil (FEFP/WFTE), X_i is the value of the independent variable, property wealth per weighted full time equivalent student (ROLL/WFTE), B is the slope or regression coefficient indicating the amount of change in the dependent variable per unit of independent variable, and A is the intercept.[30]

Four regression equations were generated for the purposes of this study. In each, property wealth per weighted full time equivalent student (ROLL/WFTE) was regressed on the appropriate variable. The values of expenditures or revenues for the four variables were:

1. General educational expenditures = FEFP/WFTE
2. Local capital outlay, including debt service = LOCAL CAPITAL OUTLAY/WFTE
3. State capital outlay, including debt service = STATE CAPITAL OUTLAY/WFTE
4. Total capital outlay, including debt service = TOTAL CAPITAL OUTLAY/WFTE

Residuals of these regressions were plotted to ascertain possible data trends or patterns unaccounted for by the utilized model.

Four analyses were undertaken. The first analysis involved the regression of general expenditures per weighted pupil (FEFP/WFTE) on property wealth per weighted full time equivalent student (ROLL/WFTE). This created a baseline for comparison of the capital outlay expenditure variables relationships to property wealth. The second and third analyses related state and local capital outlay expenditures per weighted student (STATE CAPITAL OUTLAY/WFTE and LOCAL CAPITAL OUTLAY/WFTE) to property wealth per weighted full time equivalent student (ROLL/WFTE). The final analysis related total capital outlay per weighted student (TOTAL CAPITAL OUTLAY/WFTE) to property wealth per weighted full time equivalent student (ROLL/WFTE). In each analysis, correlations, slopes, and elasticities were analyzed to ascertain the strength (correlation) and size (slopes and elasticities) of the relationships between property wealth per weighted full time equivalent student (ROLL/WFTE) and the four variables.

Results were presented in several formats. For each analysis, a graph of the regression line with the independent variable, property wealth per weighted full time equivalent student (ROLL/WFTE), on the x-axis, and the dependent variable (FEFP/WFTE, STATE CAPITAL OUTLAY/WFTE, LOCAL CAPITAL OUTLAY/WFTE, or TOTAL CAPITAL OUTLAY/WFTE) on the y-axis. Residuals were also presented graphically, in the same format. Tables were also displayed, containing correlation coefficients, R squared values, beta coefficients, intercepts, residual information, and other regression information.

The purpose of this regression was to establish differences in the baseline relationship (FEFP/WFTE and property wealth per weighted full time equivalent student, ROLL/WFTE) and capital outlay expenditure relationships with wealth (FEFP/WFTE, STATE CAPITAL OUTLAY/WFTE, LOCAL CAPITAL OUTLAY/WFTE, or TOTAL CAPITAL OUTLAY/WFTE), and the magnitude of these relationships. This was done in order to determine if there was a greater relationship between capital outlay expenditures (total and local/state components) and wealth than general expenditures and wealth.

Summary

Appropriate methodologies for equity analysis for use in this study were discussed. A wide variety of measurement tools intended to extend equity analysis to capital outlay were described. These will be used to determine the equity of capital outlay funding as a whole and the equity of each of its state and local components.

Notes

1. Florida Department of Education, Profiles of Florida School Districts, 1987-88 Financial Data (Tallahassee, FL., 1990), 5, 174-5.

2. Ibid., 5.

3. Florida Department of Education, Profiles, 176-7.

4. Robert Berne and Leanna Stiefel, The Measurement of Equity in School Finance: Conceptual, Methodological, and Empirical Dimensions (Baltimore: The Johns Hopkins University Press, 1984), 7-43.

5. James W. Guthrie, Walter I. Garms, and Lawrence C. Pierce, School Finance and Education Policy: Enhancing Educational Efficiency, Equality, and Choice, (Englewood Cliffs, NJ: Prentice Hall, 1988), 302.

6. Robert Ruch, "A Model for the Distribution of Capital Outlay Funds for Financing Public School Facilities in Indiana" (Ph.D. diss., Purdue University, 1985), 64.

7. Berne and Stiefel, The Measurement of Equity (Baltimore: The Johns Hopkins Press, 1984), 28. These and the following formulas attributed to Berne and Stiefel were adapted from their list of equity formulas.

8. Guthrie, School Finance, 303.

9. Berne and Stiefel, Measurement of Equity, 28.

10. Berne and Steifel, Measurement of Equity, 19.

11. Ruch, "A Model," 65.

12. Berne and Stiefel, Measurement of Equity, 28.

13. Ruch, "A Model," 66.

14. Ibid.

15. Berne and Stiefel, Measurement of Equity, 28.

16. R. Craig Wood, Helene B. Jones, and William L. Riley, "The Pursuit of Equity in Financing Public Education," Major Topics of School Business Management in the Mid 1980s, chap. 1 (Reston, VA: Association of School Business Officials, 1984), 1-9.

17. Berne and Stiefel, Measurement of Equity, 28.

18. Guthrie, School Finance, 304-5.

19. Berne and Stiefel, Measurement of Equity, 28.

20. Ruch, "A Model," 65.

21. Guthrie, School Finance, 305.

22. Berne and Stiefel, Measurement of Equity, 28.

23. Guthrie, School Finance, 308-9.

24. Ibid., 309-10.

25. Berne and Steifel, The Measurement of Equity, 74.

26. Ruch, "A Model," 67.

27. Berne and Steifel, Measurement of Equity, 19.

28. Berne and Stiefel, Measurement of Equity, 28.

29. Ruch, "A Model," 67.

30. George W. Bohrnstedt and David Knoke, Statistics for Social Data Analysis, 2d. ed. (Itaska, Illinois: F. E. Peacock Publishers, Inc., 1988), 258.

CHAPTER IV
PRESENTATION OF RESULTS

Introduction

This chapter presented the results of a study comparing the equity of total capital outlay revenues to that of general educational expenditures for a selected year in Florida, and the equity of state and local components relative to each other, the total, and general educational expenditures. This research attempted to answer the following questions: What is the relationship of the equity of total capital outlay revenues relative to the equity of general educational expenditures for a recent year (1988-1989) in Florida? What is the relationship of the equity of the state and local components of capital outlay and total capital outlay revenues relative to each other for a recent year (1988-1989) in Florida? The results are presented in the following sections.

Horizontal Equity Measures

Four variables were used for the analysis of horizontal equity and wealth neutrality. The first variable for analysis was the aggregate of total dollar value per weighted pupil of current operating expenditures, the Florida Educational Foundation Program (FEFP). The second variable for analysis was the total dollar value of state capital outlay revenues per weighted pupil (STATE CAPITAL OUTLAY) for each district. The third variable for analysis was the total dollar value of local capital outlay revenues per weighted pupil (LOCAL CAPITAL OUTLAY). The fourth variable for analysis was TOTAL CAPITAL OUTLAY, the sum of STATE CAPITAL OUTLAY and LOCAL CAPITAL OUTLAY. Measures used to compare the horizontal equity of these four variables were the range, the restricted range (5th to 95th percentile), the Federal Range Ratio (the restricted range divided by the 5th percentile value), the relative mean deviation, the McLoone Index (the ratio of all the summed values below the median and the total of all if funded at the median level), the variance, and the coefficient of variation.

Range Measures

The range measures used to evaluate the relative horizontal equity of these four variables were the range, the restricted range, the Federal Range Ratio, and the McLoone Index. Raw range measures are difficult to compare if there are substantial differences in the total amount of the variables. More useful comparisons may be made among measures that include a ratio of the raw range measurement and a standard value from the variable, such as the Federal Range Ratio, the Relative Mean Deviation, the Coefficient of Variation, and the McLoone Index (numbers of districts above and below the 1.5 deviation point in boxplots are also comparable).

A summary of the range statistics is displayed in Table 1. Included for each of the four variables is the range, the restricted range, the federal range ratio, and interquartile ratios.

Range and restricted range

Although the ranges and restricted ranges may not be directly compared for the four variables, they give, when compared to each other within a variable, information about extreme differences within the distribution. The range for the variable FEFP was $368.65, and the restricted range was $305.15. This means that the upper and lower 5 percent of the variable accounted for about 15 percent of the range. The ranges and restricted ranges are displayed in Table 1. The range for the variable STATE CAPITAL OUTLAY was $1,582.09, and the restricted range was $661.76. This means that the upper and lower 5 percent of the variable accounted for about 60 percent of the range differences, a much larger portion than for FEFP. This would indicate a far greater significance for extremes for the latter variable in influencing equity. The range for the variable LOCAL CAPITAL OUTLAY was $886.59, and the restricted range was $731.55. This means that the upper and lower 5 percent of the variable accounted for about 15 percent of the range differences, about the same as FEFP but much less than STATE

Table 1: Horizontal Equity Measures for FEFP, STATE CAPITAL OUTLAY, LOCAL CAPITAL OUTLAY, and TOTAL CAPITAL OUTLAY: Range Measures, Measures of Dispersion from the Mean, and Comparisons to Median Values.

Statistical Measure	VARIABLE			
	FEFP/ WFTE	STATE CAPITAL OUTLAY/ WFTE	LOCAL CAPITAL OUTLAY/ WFTE	TOTAL CAPITAL OUTLAY/ WFTE
Range	368.65	1582.09	886.59	1651.16
Restricted Range	305.15	661.76	731.55	1180.02
Federal Range Ratio	.13	10.65	85.11	8.83
Interquartile Range	143.03	82.26	310.32	364.91
Standard Deviation	91.79	290.78	217.49	341.43
Coefficient of Variation	0.04	1.35	.85	.72
Relative Mean Deviation	.03	.64	.70	.51
McLoone Index	.97	.73	.67	.73

CAPITAL OUTLAY. This would indicate a lesser significance for extremes on this variable than for STATE CAPITAL OUTLAY.

Finally, the range for the variable TOTAL CAPITAL OUTLAY was $1,651.59, and the restricted range was $1,180.02. This means that the upper and lower 5 percent of the variable accounted for over one-fourth of the range differences, more than for FEFP or LOCAL CAPITAL OUTLAY, but less than for STATE CAPITAL OUTLAY, would indicate an importance for extremes similar to FEFP but differing widely from STATE CAPITAL OUTLAY. Of the four variables, STATE CAPITAL OUTLAY would seem to have been most influenced by extreme values. This would indicate less equity for STATE CAPITAL OUTLAY than for the other variables, because of the existence of values extremely different from the others in the distribution.

The range is the difference between a distribution's highest and lowest values. The smaller the range, the less the disparity and the greater the equity. The restricted range is the difference between the 5th and 95th percentiles in a distribution. The smaller the restricted range, the greater the equity. The advantage of the restricted range over the range is that it examines values that are more representative. The restricted range constitutes a much smaller portion of STATE CAPITAL OUTLAY than the other three variables, indicating that greater extremes of inequality exist in state capital outlay revenues than in total capital outlay revenues or general educational expenditures. This indicates a possible severe horizontal equity problem for STATE CAPITAL OUTLAY, but it might also signify an attempt to redress, with widely varying state revenues, differences in LOCAL CAPITAL OUTLAY caused by lack of local revenues.

Federal range ratio

Federal range ratios for the four variables may be compared directly, because they are standardized by using a value at a common, fixed point within the distribution (i.e., the value at the 5th percentile). The federal range ratios for the four variables are displayed in Table 1. The federal range ratios for the three capital outlay variables were 10.65 for STATE CAPITAL OUTLAY, 85.11 for LOCAL CAPITAL OUTLAY, and 8.83 for TOTAL CAPITAL OUTLAY. They were all far greater than the value of .13 for FEFP. This indicated a lesser variability for state or total capital outlay revenues than local capital outlay revenues, which had very low values at the 5th percentile, suggesting an equity problem at the lower end of the LOCAL CAPITAL OUTLAY distribution), and a much greater variability for capital outlay revenues than for general expenditures, as measured by this equity statistic. This would indicate lesser equity for capital outlay revenues than for general expenditures by this measure, and a lesser equity for local capital outlay expenditures than for state or total capital outlay expenditures.

The Federal range ratio is the restricted range divided by the value of the distribution at the 5th percentile. The smaller the value, the greater the equity. The Federal range ratio is not sensitive to equal percentage increases in the distribution, or to shifts in the distribution, because it measures two fixed points near the ends. Large ratios may be caused by small denominators, indicating the existence of several districts at the bottom of the distribution with a very small portion of the variable compared with several districts at the top of the distribution. This would suggest, for STATE CAPITAL OUTLAY, a very large difference between the top few and bottom few districts. The Federal Range Ratio for STATE CAPITAL OUTLAY was much greater than for LOCAL CAPITAL OUTLAY or TOTAL CAPITAL OUTLAY, which in turn were much greater than for general educational expenditures by this measure. This indicates a serious problem with horizontal equity, relative to FEFP, for capital outlay revenues by this measure.

Boxplots and interquartile ranges

The interquartile range for FEFP was 143.03, about half the restricted range. The interquartile range for LOCAL CAPITAL OUTLAY was 310.32, a little less than half the restricted range. For STATE CAPITAL OUTLAY, the interquartile range was 82.26, around one-eighth of the restricted range. The interquartile range for TOTAL CAPITAL OUTLAY was 364.91, about one-third the restricted range.

Extreme values outside the interquartile range would appear to have made STATE CAPITAL OUTLAY less equitable than LOCAL CAPITAL OUTLAY or FEFP by this measure.

Boxplots for these variables are displayed in Figure 2 and Figure 3. The most important feature is the identification of outliers, which were 1.5 times the interquartile range above the 75th percentile or 1.5 times the interquartile range below the 25th percentile.[1] All outliers were above the 75th percentile. STATE CAPITAL OUTLAY had the most outliers (5), followed by TOTAL CAPITAL OUTLAY (4), FEFP (3), and LOCAL CAPITAL OUTLAY (1). Again, this measure seems to indicate a greater problem with outliers for STATE CAPITAL OUTLAY than the other variables.

Deviation Measures

The standard deviation, coefficient of variation, and relative mean deviation are measures of difference from the mean. The standard deviation and the coefficient of variation, by using the squares of deviations from the mean, emphasize extreme measures more than the relative mean deviation.

The standard deviation

The standard deviations are displayed in Table 1. The standard deviation is a measure of disbursement of data about the mean. In a normal, bell-shaped distribution, approximately two-thirds of the values in the distribution will fall within one standard deviation from the mean in

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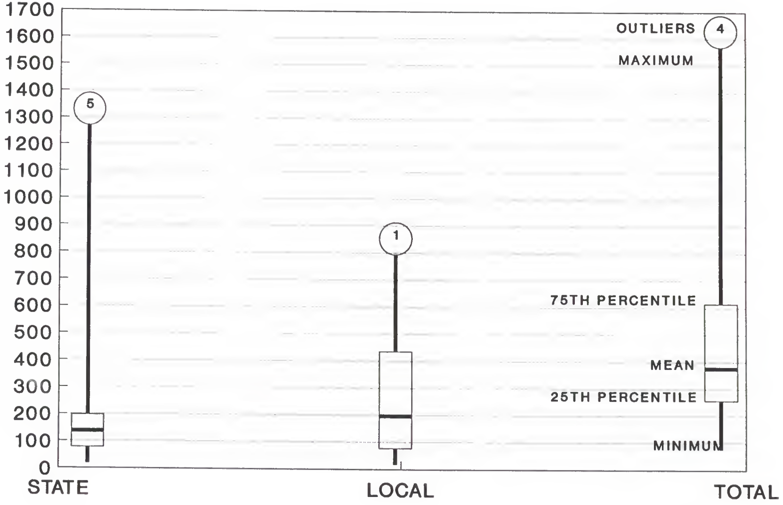

Figure 2: Boxplot for Capital Outlay Variables

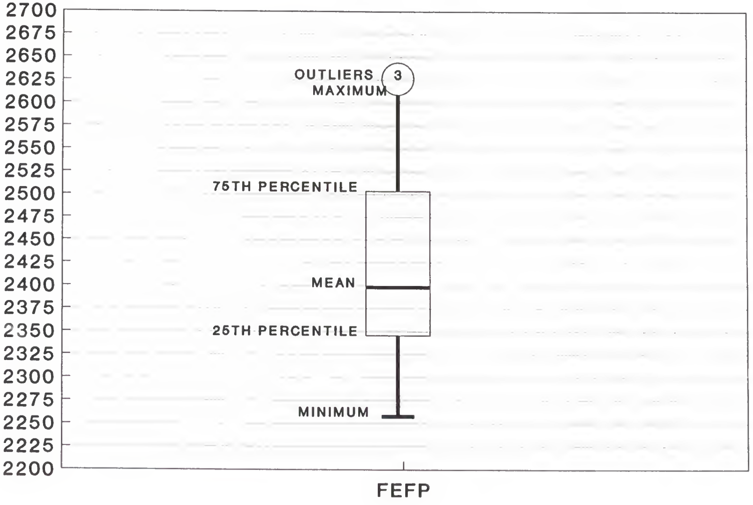

Figure 3: Boxplot for FEFP

each direction, and about 95 percent within two standard deviations. In a distribution of sixty-seven districts, twenty-five might typically fall within one standard deviation both above and below the mean, and thirty-two within two standard deviations above and below the mean, leaving only one district more than two standard deviations above the mean and one district more than two standard deviations below the mean.

The four variables do not exhibit the pattern expected of the normal distribution described above. In each of the distributions, where one district might be expected to fall above two standard deviations above the mean, there are three to four districts that are more than two standard deviations above the mean. No district is more than two standard deviations below the mean in any of the distributions, where one might have been expected in each distribution. Further, in each distribution, there are more districts below the mean than above the mean: STATE CAPITAL OUTLAY has 13 above and 54 below; LOCAL CAPITAL OUTLAY has 27 above and 40 below; TOTAL CAPITAL OUTLAY has 29 above and 38 below; FEFP has 30 above and 37 below. Distributions for the four variables, then, are not normal.

The coefficient of variation

The coefficients of variation for the four variables are displayed in Table 1. The coefficient of variation for the STATE CAPITAL OUTLAY variable was 1.35. This means that approximately two-thirds of the distribution falls within 135 percent of the mean. The coefficient of variation for the LOCAL CAPITAL OUTLAY variable was 0.85. This means that approximately two-thirds of the distribution falls within 85 percent of the mean, indicating a closer distribution than for STATE CAPITAL OUTLAY. The Coefficient of Variation for the TOTAL CAPITAL OUTLAY variable was 0.72. This means that approximately two-thirds of the distribution falls within 72 percent of the mean. This indicates that total capital outlay revenues have a tighter distribution than either of the components, particularly state revenues. The Coefficient of Variation for the FEFP variable was 0.04. This means that approximately two-thirds of the distribution falls within 4 percent of the mean, a far closer distribution than any of the other variables. As on previous indicators, capital outlay variables display far greater variability than general expenditures, with state revenues showing more variability than local revenues or total revenues. Greater variability in this context indicates possible equity problems for these variables.

The coefficient of variation is the square root of the variance (standard deviation) divided by the distribution's mean. A decreasing value indicates increasing equity. Unlike the standard deviation and the range, it is not overly sensitive to scale changes, because the mean value of the distribution is used in the ratio. Coefficients of variation for the four variables may be compared directly, because they are standardized by using a value at a common, fixed point within the distribution (in this case, the mean) as part of a ratio.[2] State capital outlay revenues show almost double the variation as a ratio of the mean than do local or total revenues, indicating less horizontal equity in this distribution. Again, this may signify an attempt to redress deficiencies in local revenue base. All capital outlay measures were much higher than general educational expenditures on this measure, demonstrating, again, a much higher degree of horizontal equity for FEFP.

The relative mean deviation

The relative mean deviations for the four variables are displayed in Table 1. The relative mean deviation for the variable STATE CAPITAL OUTLAY was 0.64. This means that the average deviation of a value in this distribution from the mean was 64 percent of the mean. The relative mean deviation for the variable LOCAL CAPITAL OUTLAY was 0.70. This means that the average deviation of a value in this distribution from the mean was 70 percent of the mean. The variation in local capital outlay revenues would, by this measure, be about the same as for state capital outlay measures. The relative mean deviation for the variable TOTAL CAPITAL OUTLAY was 0.51. This means that the average deviation of a value in this distribution from the mean was 51 percent of the mean, less than for the two components of capital outlay revenue. The relative mean deviation for the variable FEFP was 0.03. This means that the average deviation of a value in this distribution from the mean was 3 percent of the mean, much less than for any of the capital outlay variables. The pattern for the Coefficient of Variation was repeated by the Relative Mean Deviation to the extent that capital outlay revenues appeared to be much less equitable because of their greater variation than general expenditures, and total capital outlay revenues seem to be more equitable by these two measures than either of the components. The decreased variability and increased equity of STATE CAPITAL OUTLAY compared to LOCAL CAPITAL OUTLAY on this measure, which does not square deviations as does the coefficient of variation, indicates the possibility of significant outliers for STATE CAPITAL OUTLAY.

The relative mean deviation is the absolute value of the differences of each value from the mean, summed, and divided by the total of all values in the distribution. The smaller the value, the greater the equity. Coefficients of variation for the four variables may be compared directly, because they are standardized by using a value at a common, fixed point within the distribution (in this case, the total) as part of a ratio. The capital outlay variables perform about the same on this measure, but, again, over much worse than FEFP.

The mcloone index

The values for the McLoone Index are displayed in Table 1. The McLoone Index for the STATE CAPITAL OUTLAY variable was 0.73. This means that 73 percent of the revenues needed to fund all WFTE in districts below the median at the level of the median district were available. The McLoone Index for LOCAL CAPITAL OUTLAY was 0.67. The McLoone Index for TOTAL CAPITAL OUTLAY was 0.73. This indicates a similarity between total capital outlay revenues and component revenues on this measure. The McLoone Index for FEFP was 0.97. The equity of general expenditures as measured by this equity statistic was much greater than for capital outlay revenues or for either component of capital outlay revenues. Both local and state components of capital outlay, as well as the total, appeared to perform about the same on this variable. The lower half of the districts received from two-thirds to three-quarters of what they would have received if at the level of the median district.

The McLoone Index is the ratio of the actual values below the median, summed, and the total of values below the median if all values were at the median. In public school finance studies, this index measures the amount of revenue required to raise the revenue of districts in the lower half to the state median. Unlike most measures, the greater the value, the greater the equity. Only the equity of the lower half of the distribution is considered. The similar values for the capital outlay revenue variables indicates that the components showed similar horizontal equity for districts in the lower half of the distribution. If the McLoone Index for each of the variables were subtracted from 1, however, it may be seen that a greater percentage of the variable was required to bring the lower districts up to the median in capital outlay revenues than in general educational expenditures, indicating a much better performance again, with regard to horizontal equity, for FEFP on this measure.

Fiscal Neutrality Measures

The equity measures previously discussed have focused on the dispersion of the distributions in measuring the horizontal equity for the four variables. Fiscal neutrality measures assess the relationship between district wealth (ROLL) and expenditures or revenues. These measures include the Gini Coefficient, the Lorenz Curve (a visual representation of the Gini Coefficient), and several regression measures: the correlation coefficient, the regression coefficient (or slope), and the elasticity coefficient.

The Gini Coefficient

Values of the Gini Coefficient for the four variables are displayed in Table 2. The Gini Coefficient for the STATE CAPITAL OUTLAY variable was -.12, indicating that any given percentage of WFTE received more than that percentage of this variable. The Gini Coefficient for LOCAL was .19, for TOTAL was .11, and for FEFP was .01. This indicates that when these variable distributions were ranked by wealth, that FEFP came much closer to providing any given percentage of WFTE with the same percentage of the variable than did TOTAL CAPITAL OUTLAY or LOCAL CAPITAL OUTLAY, and TOTAL CAPITAL OUTLAY was closer than LOCAL CAPITAL OUTLAY.

The Gini coefficient measures how close the variable distribution is to providing a specific percentage of the population with that same percentage of the variable. The smaller the value, the greater the equity. The Gini coefficient is widely used in measuring per-capita inequality. The FEFP performs best on this measure, and local capital outlay revenues worst. State capital outlay, although performing worse than FEFP, provides a greater percentage of state revenues at almost all levels of population than the percentage of the population, which might be seen as quite favorable from a vertical equity point of view.

Lorenz Curves for the four variables are displayed in Figures 4-7. The Lorenz Curve for STATE CAPITAL OUTLAY, displayed in Figure 4, shows a large state input at the lowest end of the continuum, within the least wealthy districts containing the lowest 5 percent of WFTE. The Lorenz Curve for FEFP, displayed in Figure 5, demonstrates an equivalent relationship at every point on the continuum between percentage of expenditure and percentage of WFTE.

Table 2: Fiscal Neutrality Measures for FEFP, STATE CAPITAL OUTLAY, LOCAL CAPITAL OUTLAY, and TOTAL CAPITAL OUTLAY. Regressions and correlations were computed with and without outliers (values beyond the upper and lower bound of a 95 percent confidence interval).

Statistical Measure	VARIABLE			
	FEFP/ WFTE	STATE CAPITAL OUTLAY/ WFTE	LOCAL CAPITAL OUTLAY/ WFTE	TOTAL CAPITAL OUTLAY/ WFTE
Gini Coefficient	.01	-.12	.19	.11
Coefficient of Correlation	.42	-.25	.72	.17
Coefficient w/out outliers	.49	-.17	.79	.64
Correlation Squared (R Squared)	.18	.06	.52	.03
w/o outliers	.24	.03	.63	.41
Regression Coefficient (Slope)		-.00081		
Elasticity Coefficient		-.52		
Quadratic Equations w/o outliers				
Quadratic Coefficient	3.58E-9		-6.42E-9	-6.36E-9
Linear Coefficient	-0.0012		+0.0039	+0.0038
Intercept	2470.21		-128.81	45.09

The Lorenz Curve for LOCAL CAPITAL OUTLAY, displayed in Figure 6, shows a failure to provide the lower half with the percentage of local capital outlay revenues equivalent to percentage of WFTE. The lower half received about 35 percent of LOCAL CAPITAL OUTLAY, and the upper half the rest. The change from providing a range of WFTE with less than their share to more than their share is clearly visible on the chart at about the 57th percentile, indicating that the bottom 4/7 received about 38 percent, and the upper 3/7 the remaining 62 percent of LOCAL CAPITAL OUTLAY. This would indicate that the upper 3/7 of WFTE, ranked by wealth, received about 116 percent more per WFTE for LOCAL CAPITAL OUTLAY than the lower 4/7 ((57/38) / (43/62)). The Lorenz Curve for TOTAL CAPITAL OUTLAY, displayed in Figure 7, demonstrates a similar pattern, but to a lesser degree. The lower 57 percent of WFTE receive about 45 percent TOTAL CAPITAL OUTLAY, and the upper 43 percent receive the remaining 55 percent. This would indicate that the upper 3/7 of WFTE, ranked by wealth, received about 62 percent more per WFTE for TOTAL CAPITAL OUTLAY than the lower 4/7 ((55/45) / (43/57)). The reversal in slope on both curves at almost exactly the same point suggests, at least visually, a connection.

The Lorenz Curve is a depiction of the Gini Coefficient. The Lorenz Curve graphically describes a comparison between percentages of a variable and percentages of a population. It is the graphical representation of the Gini Coefficient. The Gini Coefficient is calculated by dividing the area between the 45 degree line on the graph of the Lorenz Curve and the Lorenz Curve itself by the area beneath the 45 degree line. The Lorenz Curves graphically depict the similar percentage of variable and population for FEFP, the lesser percentage of variable compared to a percentage of population for LOCAL CAPITAL OUTLAY and TOTAL CAPITAL OUTLAY, and the greater percentage of variable compared to percentage of population for STATE CAPITAL OUTLAY.

Regression Measures

The investigation of fiscal neutrality, the relationship of expenditures or revenues and wealth, involved an analysis of each of the four variables on a measure of wealth, the adjusted assessment of taxable property wealth per WFTE (ROLL). The scatterplots for these regressions are displayed in Figures 8-11.

The scatterplot for FEFP, displayed in Figure 8, does not suggest a strong general correlation between wealth and FEFP. The scatterplot for STATE CAPITAL OUTLAY, displayed in Figure 9, indicates that a small number of low wealth districts (four) have received a substantial input from the state in 1988-9, but that the rest of the districts seem to have equivalency. The scatterplot for LOCAL CAPITAL OUTLAY,

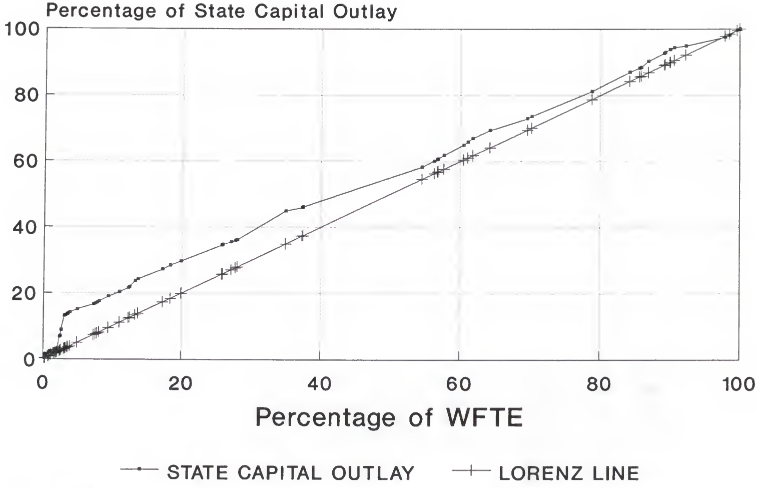

Figure 4: Lorenz Curve for STATE CAPITAL OUTLAY/WFTE vs. ROLL/WFTE

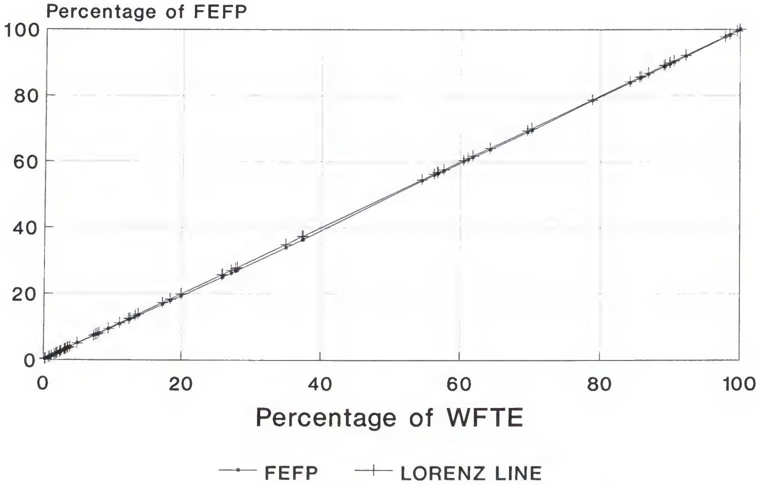

Figure 5: Lorenz Curve for FEFP/WFTE vs. ROLL/WFTE

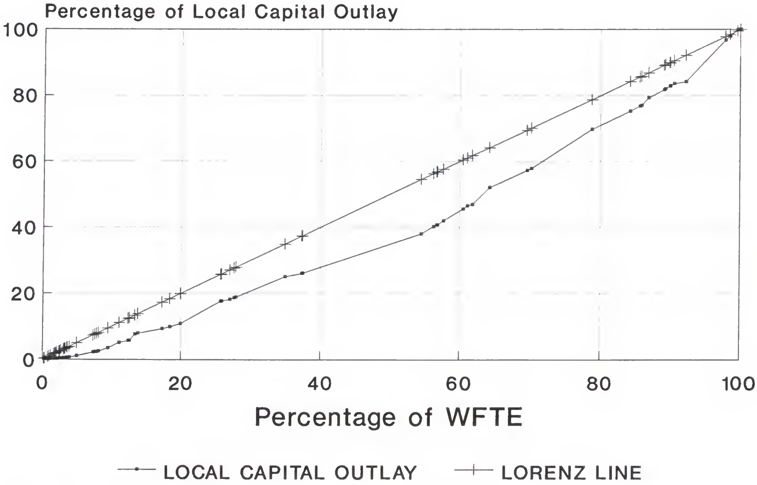

Figure 6: Lorenz Curve for LOCAL CAPITAL OUTLAY/WFTE vs. ROLL/WFTE

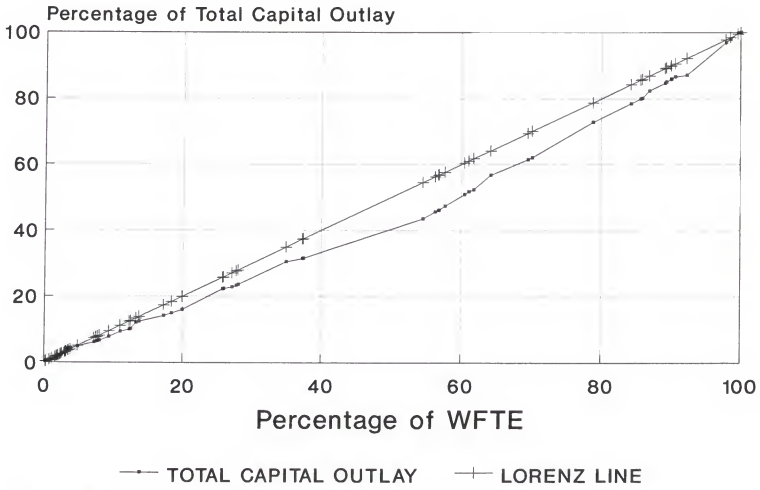

Figure 7: Lorenz Curve for TOTAL CAPITAL OUTLAY/WFTE vs. ROLL/WFTE

displayed in Figure 10, would appear to demonstrate a strong relationship between wealth and local capital outlay revenues. A small group of districts at around $50,000/WFTE seem to have almost no local capital outlay revenues, and a larger number at around $50,000/WFTE to $100,000/WFTE have values for LOCAL CAPITAL OUTLAY of less than 150. The scatterplot for TOTAL CAPITAL OUTLAY, displayed in Figure 11, illustrates the same general pattern. A large number of less wealthy districts were receiving lesser amounts of this variable, as demonstrated by their concentration in the lower left of the chart, but unlike LOCAL CAPITAL OUTLAY, there were some revenues for all these districts. The appearance of the four districts in the upper left quadrant, not visible in LOCAL CAPITAL OUTLAY, shows the large inputs of state aid to a small number of districts.

Using SAS, an attempt was made for each variable to test for the existence of a significant cubic or quadratic equation, in addition to testing for the traditional linear equation. For each variable, beginning with the cubic equation and working back through the quadratic equation to the linear equation, the value PROB > T (the probability that the value of the regression coefficient was actually zero and that this coefficient could have occurred by chance) was evaluated. If this value were less than .05, then the coefficient was considered to be significant, and this equation had the greatest explanatory power of the three evaluated for each variable. If this value were greater than .05, then the next possible equation was evaluated.

For two of the variables, FEFP and LOCAL CAPITAL OUTLAY, regression coefficients were found to be significant for the quadratic equation. The equation for LOCAL CAPITAL OUTLAY was $Y = -.0000000077X^2 +.0.0044X - 145.21$, and for FEFP, $Y = 0.0000000031X^2 +.0.00095X + 2457.61$. The linear coefficient for STATE CAPITAL OUTLAY was found to be significant, and the equation for STATE CAPITAL OUTLAY was $Y = -0.0008X + 327.72$. None of the coefficients for TOTAL CAPITAL OUTLAY were found to be significant. The significance of quadratic coefficients indicated that the true pattern, if drawn through the scatterplots, would have curved either upward or downward, depending on the signs of the coefficients for the squared terms. However, the scatterplots indicated the existence of several outliers, which had the capacity to distort the equations. From two to four outliers, values beyond the upper and lower bounds of a 95 percent confidence interval generated by two standard errors of estimate from the prediction equation, were removed from the each of the variable distributions, and the equations were tested again. After the removal of outlier values, STATE CAPITAL OUTLAY was found to have no significant coefficients. FEFP and LOCAL CAPITAL OUTLAY retained their significant quadratic coefficients. The

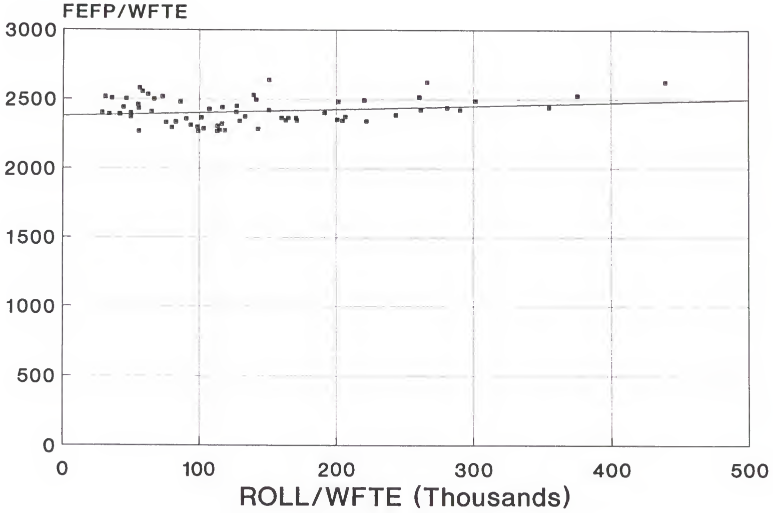

Figure 8: Scatterplot for FEFP/WFTE vs. ROLL/WFTE

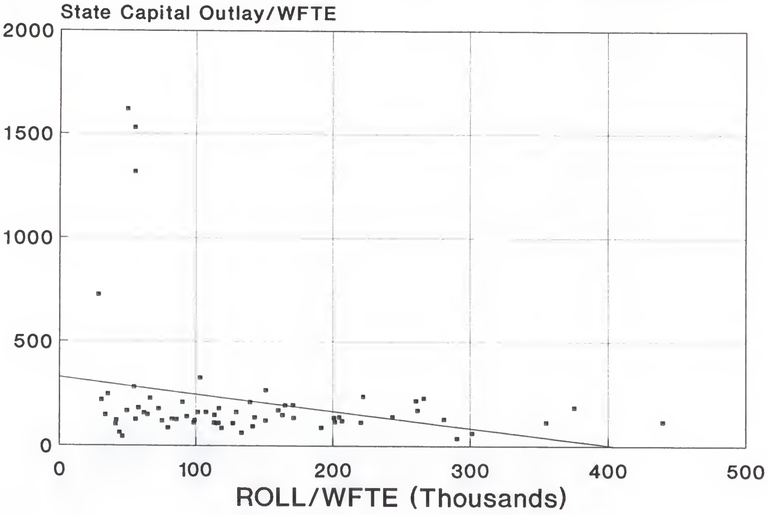

Figure 9: Scatterplot for STATE CAPITAL OUTLAY/WFTE vs. ROLL/WFTE

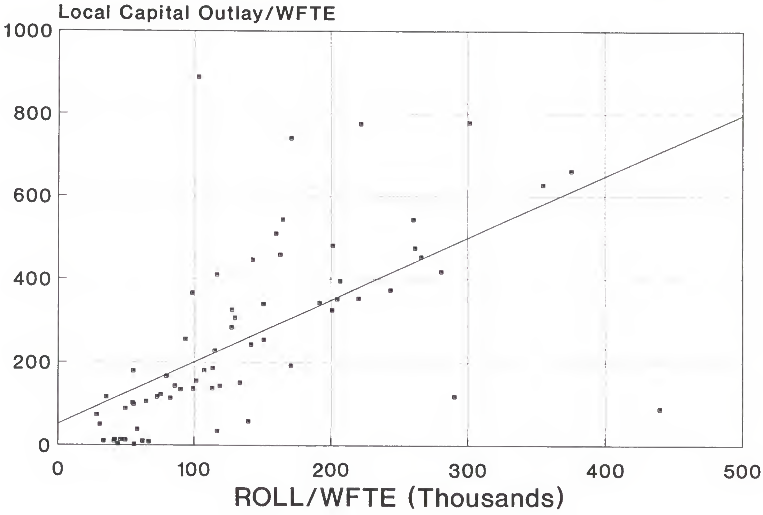

Figure 10: Scatterplot for LOCAL CAPITAL OUTLAY/WFTE vs. ROLL/WFTE

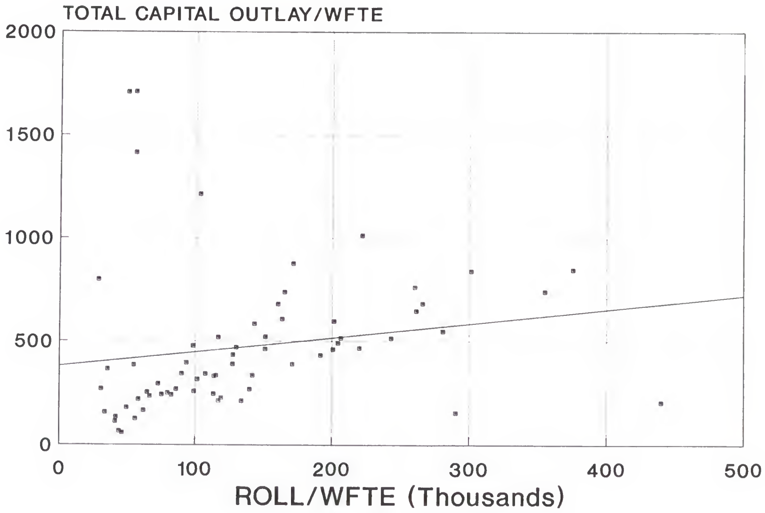

Figure 11: Scatterplot for TOTAL CAPITAL OUTLAY/WFTE vs. ROLL/WFTE

equation for LOCAL CAPITAL OUTLAY was $Y = -.0000000064X^2 +.0.0039X - 128.81$, and for FEFP, $Y = 0.0000000036X^2 - .0.0012X + 2470.21$. TOTAL CAPITAL OUTLAY was also found to have a significant quadratic coefficient. The equation for TOTAL CAPITAL OUTLAY was $Y = -.0000000064X^2 +.0.0038X + 45.09$. The curves for these equations, displayed in Figure 12, suggest that districts in the middle of the wealth spectrum for FEFP received less of the variable than those at either extreme, but more of the variable for LOCAL CAPITAL OUTLAY and TOTAL CAPITAL OUTLAY, with the positive association of wealth and variable obtained holding for the vast majority of districts in the last two variable distributions.

If the linear relationship is significant, the degree to which changes in revenue or expenditures are affected by changes in wealth is measured by the regression coefficient (or slope) of the regression equation. The regression coefficient for the regression of STATE CAPITAL OUTLAY and ROLL was -.00081. This indicates that an increase of $1000 in ROLL would typically result in an decrease of $.81 in STATE CAPITAL OUTLAY. However, when outliers were removed, the linear regression coefficient was no longer significant. The quadratic character of the other equations reduces the importance of the linear coefficient for them.

The elasticity measures the degree to which a certain percentage of wealth is associated with an increase or

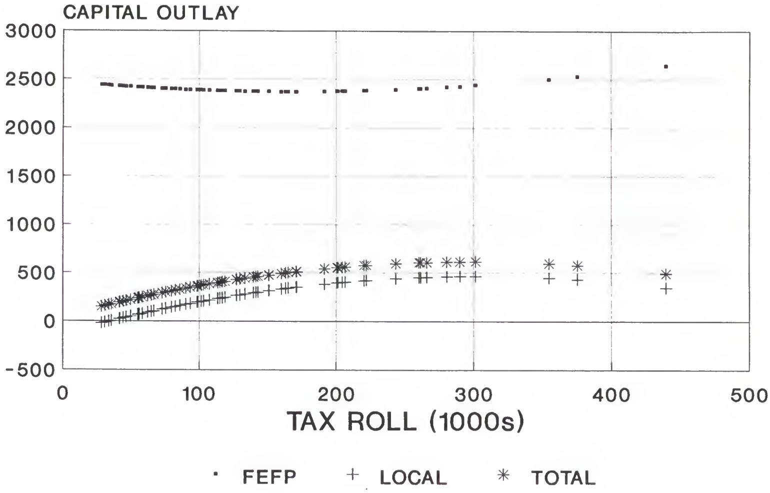

Figure 12: Quadratic Curves for FEFP, LOCAL CAPITAL OUTLAY/WFTE, STATE CAPITAL OUTLAY, and TOTAL CAPITAL OUTLAY

decrease in the percentage of revenues or expenditures. Elasticity, which is adjusted by values within the distribution in a ratio (in this case, the ratio of the means of the two variables is multiplied by the slope), allows for comparisons among the variables regarding change in percentage of the dependent variables associated with a constant change (1 percent) in the independent variable. Again, elasticities are significant if the regression equations are linear and the slopes, therefore, meaningful. The elasticity coefficient for the regression of ROLL and STATE CAPITAL OUTLAY was -0.52. This means that a change of 1 percent in ROLL would typically result in a change of -0.52 percent in STATE CAPITAL OUTLAY. The significance of only one linear equation greatly reduces the explanatory power of elasticities.

The Pearson correlation coefficient was utilized to determine the strength of the relationship between each of the four variables and the wealth variable. The correlation between STATE CAPITAL OUTLAY and ROLL was -.25. This indicated that STATE CAPITAL OUTLAY was inversely correlated with ROLL. The correlations of ROLL with TOTAL CAPITAL OUTLAY was .17 (weak), with FEFP was .42 (moderate), and with LOCAL CAPITAL OUTLAY was .72 (strong). With outliers removed, the correlations of ROLL with STATE CAPITAL OUTLAY was -.17 (inverse and weak), with TOTAL CAPITAL OUTLAY was

.64 (strong), with FEFP was .49 (moderate), and with LOCAL CAPITAL OUTLAY was .79 (strong).

By squaring the correlation coefficient, the proportion of variance in the dependent variable explained by the independent variable may be ascertained. Unlike several of the previous statistics, these are useful in discussing variables with quadratic regression equations. The squared correlation coefficients (R squared) are displayed in Table 2. Property wealth accounted for 6.21 percent of the variation in STATE CAPITAL OUTLAY before outliers were removed, and 3.41 percent after removal. Property wealth accounted for 51.77 percent of the variation in LOCAL CAPITAL OUTLAY before outliers were removed, and 62.85 percent after removal. Property wealth accounted for 3.20 percent of the variation in TOTAL CAPITAL OUTLAY before outliers were removed, and 40.87 percent after removal. Property wealth accounted for 18.57 percent of the variation in FEFP before outliers were removed, and 24.31 percent after removal. Removal of outliers, then, increased somewhat the explanatory power of the equations for FEFP and LOCAL CAPITAL OUTLAY, slightly reduced the small explanatory power of the STATE CAPITAL OUTLAY equations, and markedly improved the explanatory power of the TOTAL CAPITAL OUTLAY equation, indicating a moderate to strong wealth dependency without outliers. LOCAL CAPITAL OUTLAY and TOTAL CAPITAL OUTLAY exhibit a moderate to strong wealth dependence, FEFP a smaller wealth dependence, and STATE CAPITAL OUTLAY almost no wealth dependence, which would suggest that overall, state revenues were not being used effectively to address wealth dependency problems for LOCAL CAPITAL OUTLAY and TOTAL CAPITAL OUTLAY.

The possibility has been raised on several occasions in this chapter that violations of horizontal equity by STATE CAPITAL OUTLAY might be justified if deficiencies caused by lack of local wealth were being addressed on a district by district basis. To test this, LOCAL CAPITAL OUTLAY was correlated with STATE CAPITAL OUTLAY in order to see if state capital outlay revenues were systematically addressing local capital outlay revenue deficits. A high negative correlation would have indicated that the system was designed to address deficits on a district by district basis. The correlation coefficient of LOCAL CAPITAL OUTLAY and STATE CAPITAL OUTLAY was -.13, indicating that deficits were not effectivily addressed on a district by district basis by state funding. The squared correlation of STATE CAPITAL OUTLAY and LOCAL CAPITAL OUTLAY was .02, indicating that very little of the variation in local capital outlay was explained by state capital outlay revenues.

Discussion and Interpretation

Some clear patterns emerged among the four variables in the calculation of the dispersion statistics indicating horizontal equity. With regard to the range, comparison of ranges for each variable indicated a greater effect of extremes in the STATE CAPITAL OUTLAY/FEFP variable. However, restricted ranges reversed the order, if slightly, between STATE CAPITAL OUTLAY and LOCAL CAPITAL OUTLAY.

The Federal Range Ratios for capital outlay variables were different from each other, with LOCAL CAPITAL OUTLAY having a far greater value than the others, but all were far larger than the value for FEFP. Interquartile ranges demonstrated a greater range effect by LOCAL CAPITAL OUTLAY than by STATE CAPITAL OUTLAY on total capital outlay revenues.

On the Coefficient of Variation, total capital outlay revenues had a tighter distribution than either of the components, particularly state revenues. The Coefficient of Variation for the FEFP variable was much smaller than for any of the capital outlay variables. The variation in local capital outlay revenues would, by this measure, be much less than for state capital outlay measures. As regards the relative equity of STATE CAPITAL OUTLAY and LOCAL CAPITAL OUTLAY, the dispersion measures were not consistent.

The relative mean deviation showed a rough equivalence between local and state capital outlay revenues, with somewhat less dispersion for total capital outlay revenues. A better performance for STATE CAPITAL OUTLAY on this measure, showing less variability compared to LOCAL CAPITAL OUTLAY than displayed by the coefficients of variation, indicated the possible existence of strong outliers for STATE CAPITAL OUTLAY. Again, FEFP had a much more equitable value than any of the capital outlay revenue variables.

The McLoone Index values indicated a similarity between total capital outlay revenues and component revenues on this measure. The McLoone Index for FEFP was much higher, approaching 1.00, which is perfect equity on this measure.

Consistently, then, the equity of general expenditures as measured by these dispersion statistics was much greater than for capital outlay revenues or for either component of capital outlay revenues. The relative equity pattern for LOCAL CAPITAL OUTLAY and STATE CAPITAL OUTLAY, relative to each other and to the total, was mixed and inconsistent. It was possible, however, that STATE CAPITAL OUTLAY, in attempts to address wealth deficiencies causing violations of horizontal equity in LOCAL CAPITAL OUTLAY, might reflect significant violations of horizontal equity.

Fiscal neutrality measures showed a somewhat different, though in other respects similar, pattern of results than did dispersion statistics. The Gini Coefficients demonstrated that when these variable distributions were ranked by wealth, FEFP came much closer to providing any given percentage of WFTE with the same percentage of the variable than did TOTAL CAPITAL OUTLAY or LOCAL CAPITAL OUTLAY, and TOTAL CAPITAL OUTLAY was closer than LOCAL CAPITAL OUTLAY. The negative value of STATE CAPITAL OUTLAY, however, indicated that poorer districts were receiving more state aid than their population would merit on an even distribution, suggesting again a possible counterbalancing effect to local capital outlay revenue distributions.

Scatterplots for the variables yielded trends. Concentrations of districts in the lower left quadrant indicated groups of districts with low wealth who received little of the LOCAL CAPITAL OUTLAY and TOTAL CAPITAL OUTLAY variables. Visual appearance of correlation of wealth and variable seemed to contradict the low correlation coefficient of wealth and TOTAL CAPITAL OUTLAY, possibly explainable by several outliers in the upper left quadrant. State aid to low wealth districts seemed to be sporatic, affecting several low wealth districts very strongly, but most low wealth districts little compared to higher wealth districts.

The Lorenz Curves demonstrated, in both LOCAL CAPITAL OUTLAY and TOTAL CAPITAL OUTLAY, a change in slope from less than 1 to greater than 1 at around the 57th percentile of WFTE. Comparisons of variable per WFTE for the fraction of WFTE above and below that point yielded large differences. Further, the existence of the change in slope at the same place on the graph indicated a connection between LOCAL CAPITAL OUTLAY and TOTAL CAPITAL OUTLAY. The Lorenz Curve for STATE CAPITAL OUTLAY demonstrated a large input of state capital outlay revenues for the lowest 5 percent of students.

Regression of the four variables on the wealth measure yielded three quadratic equations after outliers were eliminated. Plots of these equations demonstrated a wealth dependency for most of the districts in the LOCAL CAPITAL OUTLAY and TOTAL CAPITAL OUTLAY distributions, lessening at higher levels of wealth.

Correlation coefficients showed that STATE CAPITAL OUTLAY was inversely correlated with ROLL. Otherwise, the significance of quadratic coefficients decreased the importance of this measure. When the correlation coefficients for distributions without outliers were squared, ROLL was seen to explain very little of the variation in STATE CAPITAL OUTLAY, about 41 percent of the variation in TOTAL CAPITAL OUTLAY, and about 62 percent of the variation in LOCAL CAPITAL OUTLAY, and about 24 percent of the variation in FEFP. This suggests that wealth neutrality as measured by this statistic does not exist for either LOCAL CAPITAL OUTLAY or TOTAL CAPITAL OUTLAY; STATE CAPITAL OUTLAY was neutral, but apparently does not redress the lack of wealth neutrality in LOCAL CAPITAL OUTLAY enough to have a large effect on the lack of wealth neutrality in TOTAL CAPITAL OUTLAY. FEFP does not do as well on this measure as on the dispersion measures discussed earlier.

The correlation coefficient of LOCAL CAPITAL OUTLAY and STATE CAPITAL OUTLAY was -.13. The squared correlation of STATE CAPITAL OUTLAY and LOCAL CAPITAL OUTLAY was .02, indicating that very little of the variation in local capital outlay was explained by state capital outlay revenues. It would appear then, that state revenues do not effectively address capital outlay shortfalls in local revenues per WFTE on a district by district basis, as the negative Gini Coefficient and smaller TOTAL CAPITAL OUTLAY deviations might have suggested. The impression given by the lack of mitigation of wealth neutrality violation in LOCAL CAPITAL OUTLAY revenues by state revenues, demonstrated in the regression analysis, so that total capital outlay revenues might be wealth neutral, is reinforced here by the lack of correlation between LOCAL CAPITAL OUTLAY and TOTAL CAPITAL OUTLAY. The mitigation of lack of wealth by state revenues was limited, then, to only a few districts, and does not change the overall pattern of wealth dependence for local and total revenues.

The elasticity coefficients were of limited value in the analysis, since only one value was usable. The same was true for the slopes.

Fiscal neutrality measures, then, suggest greater fiscal neutrality for general expenditures than for capital outlay, taken as a whole. The measures give differing evaluations of possible fiscal neutrality problems among the other variables. The square of the correlation coefficient would suggest that a strong fiscal neutrality problem exists in the area of local capital outlay expenditures, not mitigated in the overall pattern by state capital outlay revenues. The scatterplots indicated that some of the weak correlations may have been due to the counterbalancing influence of a few outliers for state (and total) revenues, an impression confirmed by regression without the outliers. The scatterplots also seem to show a distinct group of low wealth districts that is faring poorly in local and total capital outlay revenues. The Lorenz curves indicate that a distinct break occurs at around the 57th percentile of wealth per weighted FTE, and that those above that point of wealth fare much better in terms of local and total capital outlay revenues per WFTE than those below the point.

In summary, the superiority of general expenditures demonstrated in dispersion measures is extended to fiscal neutrality, and violations of wealth neutrality exists for LOCAL CAPITAL OUTLAY and TOTAL CAPITAL OUTLAY revenues, although STATE CAPITAL OUTLAY appears to be wealth neutral. The care extended to creating conditions of horizontal equity in the planning of general educational expenditures, FEFP, has apparently not been extended to planning for capital outlay. Special state revenue inputs for a few low wealth district do not change the overall pattern of wealth dependency for local capital outlay revenues. The large superiority of FEFP for horizontal equity on dispersion measures over capital outlay variables is not excused by some systematic attempt to use state revenues to address local wealth deficiencies.

Notes

1. R. Craig Wood, David S. Honeyman, and Verne Bryers, "Equity in Indiana School Finance: A Decade of Local Levy Property Tax Restrictions," Journal of Education Finance 16(1), 85-86.

2. Mark L. Berenson and David M. Levine, Basic Business Statistics: Concepts and Applications (Englewood Cliffs, NJ: Prentice-Hall, Inc., 1979), 87.

CHAPTER V
FINDINGS, CONCLUSIONS, AND RECOMMENDATIONS

Introduction

The objective of this research was to continue the extension of equity theory from its traditional concern with general educational expenditures to capital outlay. Four components of educational spending in Florida were analyzed: the aggregate of total dollar value of current operating expenditures, the Florida Educational Foundation Program; the total dollar value of state capital outlay revenues (STATE CAPITAL OUTLAY) for each district; the total dollar value of local capital outlay revenues (LOCAL CAPITAL OUTLAY); and the sum of STATE CAPITAL OUTLAY and LOCAL CAPITAL OUTLAY (TOTAL CAPITAL OUTLAY).

This research attempted to answer the following questions:

1. What was the relationship of the equity of total capital outlay revenues relative to the equity of general educational expenditures for a recent year in Florida;

2. What was the relationship of the equity of the state and local components of capital outlay and total capital outlay revenues relative to each other for a recent year in Florida.

Horizontal equity was measured by statistics that reflect dispersion in a distribution, such as the range, the restricted range (5th to 95th percentile), the Federal Range

Ratio (the restricted range divided by the 5th percentile value), the relative mean deviation, the McLoone Index (the ratio of all the summed values below the median and the total of all if funded at the median level), the variance, and the coefficient of variation. Equal opportunity analysis was utilized to examine the relationship between district wealth and expenditures; regression measures (correlation coefficients, slopes, and elasticities) were used. Fiscal neutrality was explored by use of the Gini Coefficient and the Lorenz Curve.

Observations

The range measures used to evaluate the relative horizontal equity of these four variables were the range, the restricted range, the Federal Range Ratio, and the McLoone Index. The Federal Range Ratio for LOCAL CAPITAL OUTLAY (85.11), was much larger than for STATE CAPITAL OUTLAY (10.65), or TOTAL CAPITAL OUTLAY (8.83), which in turn were much greater than for general educational expenditures by this measure, FEFP (.13). Boxplots for the variables indicated a greater number of outliers for STATE CAPITAL OUTLAY than for the other variables.

The standard deviation, coefficient of variation, and relative mean deviation are measures of difference from the mean. In a comparison of the coefficients of variation, state capital outlay revenues were twice as variable as local or total revenues (135.68 to 85.13 and 72.64). All capital outlay measures were much greater than general educational expenditures (3.81) on this measure, demonstrating, again, a much higher degree of horizontal equity for FEFP. Analysis of relative mean deviations displayed decreased variability and increased equity of STATE CAPITAL OUTLAY (.64) compared to LOCAL CAPITAL OUTLAY (.70). TOTAL CAPITAL OUTLAY (.51) was more equitable than either component. The capital outlay variables had approximately the same values on this measure, but, again, much more than FEFP (.03), indicating less horizontal equity. On the McLoone Index, the values presented a similar pattern for the capital outlay revenue variables (.73 for STATE CAPITAL OUTLAY, .67 for LOCAL CAPITAL OUTLAY, and .73 for TOTAL CAPITAL OUTLAY).

Fiscal neutrality measures were used to assess the relationship between district wealth and expenditures or revenues. These measures included the Gini Coefficients, the Lorenz Curve (a visual representation of the Gini Coefficient), and several regression measures--the correlation coefficient, the regression coefficient (or slope), and the elasticity coefficient.

An analysis of Gini Coefficients indicated that when these variable distributions were ranked by wealth, FEFP (.01) came much closer to providing any given percentage of WFTE with the same percentage of the variable than did TOTAL CAPITAL OUTLAY (.11) or LOCAL CAPITAL OUTLAY (.19). TOTAL

CAPITAL OUTLAY was closer than LOCAL CAPITAL OUTLAY. State capital outlay, although not as close to zero (the optimum measure) as FEFP (-.12), provided a greater percentage of state revenues at almost all levels of population than the percentage of the population. The shape of Lorenz Curves indicated a large state input at the low end of the continuum. An equivalent relationship was demonstrated on the continuum between percentage of expenditure and percentage of WFTE for FEFP. The Lorenz Curves also indicated a failure to provide the lower half of the distribution with a percentage of LOCAL CAPITAL OUTLAY equivalent to a percentage of WFTE.

The interpretation of the scatterplot for STATE CAPITAL OUTLAY indicated that a small number of low wealth districts (four) have received a substantial input from the state in 1988-1989, but that the rest of the districts had no strong pattern. The scatterplot for LOCAL CAPITAL OUTLAY demonstrated a general increase in the variable at increasing levels of wealth. A small group of districts (around 50,000 WFTE) had limited local capital outlay revenues, and a larger number of districts (around 50,000 to 100,000 WFTE) had values for LOCAL CAPITAL OUTLAY less than $150/WFTE. The scatterplot for TOTAL CAPITAL OUTLAY repeated the same general pattern. A large number of less wealthy districts were receiving lesser amounts of this variable, as demonstrated by a concentration of these districts in the lower left of the chart. Unlike LOCAL CAPITAL OUTLAY, there were limited revenues for all these districts. The appearance of the four districts in the upper left quadrant, not visible in LOCAL CAPITAL OUTLAY, indicated large inputs of state aid to a small number of less wealthy districts.

With outliers removed, quadratic coefficients became significant for FEFP, LOCAL CAPITAL OUTLAY, and TOTAL CAPITAL OUTLAY. The curves for these equations suggested that districts in the middle of the wealth spectrum for FEFP received less than those at either extreme, but more of the variable for LOCAL CAPITAL OUTLAY and TOTAL CAPITAL OUTLAY, with the positive association of wealth and variable obtained holding for the vast majority of districts in the last two variable distributions, but dropping off at very high wealth levels. No coefficients were significant for STATE CAPITAL OUTLAY.

Pearson correlation coefficients, slopes, and elasticities were less significant than originally anticipated since only one linear equation was significant. The correlation coefficient of LOCAL CAPITAL OUTLAY and STATE CAPITAL OUTLAY was negative, and the squared correlation demonstrated that less than 2 percent of the variation was explained.

Curves generated on the basis of quadratic equations indicated increasing values of TOTAL CAPITAL OUTLAY and

LOCAL CAPITAL OUTLAY for increasing values of wealth. This did not apply, however, for the few highest values of wealth, for which values for TOTAL CAPITAL OUTLAY and LOCAL CAPITAL OUTLAY decreased. This decrease in values for TOTAL CAPITAL OUTLAY and LOCAL CAPITAL OUTLAY near the end of the distribution for wealth accounted for the shape of the curve.

The square of the correlation, R squared, indicates the percentage of variability in one variable caused by another. R squared, with outliers removed, for LOCAL CAPITAL OUTLAY (.63) was higher than for TOTAL CAPITAL OUTLAY (.41), which was higher than FEFP (.24). For STATE CAPITAL OUTLAY, wealth explained very little of the variation (.03). The removal of outliers made a large change in the R squared of only TOTAL CAPITAL OUTLAY (.03 to .41), and slightly increased R squared for LOCAL CAPITAL OUTLAY and TOTAL CAPITAL OUTLAY, while slightly decreasing R squared for STATE CAPITAL OUTLAY.

Findings

These findings have implications for discussion of the horizontal equity of the four variables. The implications for dispersion statistics and for fiscal neutrality analysis are discussed separately.

The lesser percentage that the restricted range comprised of total range for STATE CAPITAL OUTLAY indicated less horizontal equity for STATE CAPITAL OUTLAY, but might also have signified an attempt to redress differences in LOCAL CAPITAL OUTLAY caused by lack of local revenues. The much greater value for the Federal Range Ratio of LOCAL CAPITAL OUTLAY indicated less horizontal equity because of several very low values in the distribution; all capital outlay variables had values less equitable than FEFP on this measure.

FEFP is again more equitable for the coefficient of variation and the relative mean deviation; the higher values of STATE CAPITAL OUTLAY compared to LOCAL CAPITAL OUTLAY and TOTAL CAPITAL OUTLAY on the coefficient of variation and the equality of STATE CAPITAL OUTLAY, LOCAL CAPITAL OUTLAY, and TOTAL CAPITAL OUTLAY on the relative mean deviation indicated outliers for STATE CAPITAL OUTLAY that are lessening horizontal equity for this variable on these measures. Similar values on the McLoone Index for capital outlay variables indicated that the components showed similar horizontal equity for districts in the lower half of the distribution, but again, FEFP was more equitable than any of the capital outlay variables on this measure.

Fiscal neutrality analysis similarly reflected greater fiscal neutrality for FEFP. The FEFP had a very low value on the Gini Coefficient, indicating greater horizontal equity than the other variables; however, the negative value of STATE CAPITAL OUTLAY demonstrated greater vertical equity, because greater values of the variable were addressed to LOCAL CAPITAL OUTLAY and TOTAL CAPITAL OUTLAY deficiencies in districts of low wealth. The Lorenz curves showed large state inputs to several districts near the bottom of the wealth distribution, indicating a possible attempt to redress deficiencies in local revenues. The upper half of the distribution received more of the LOCAL CAPITAL OUTLAY and TOTAL CAPITAL OUTLAY variables, indicating a general problem with horizontal equity originating in LOCAL CAPITAL OUTLAY and reflected in TOTAL CAPITAL OUTLAY, and not mitigated overall by large inputs to several poor districts in STATE CAPITAL OUTLAY.

The R squared value for LOCAL CAPITAL OUTLAY correlated with wealth was high; over 60 percent of all variation with LOCAL CAPITAL OUTLAY was explained by wealth. The low R squared value of STATE CAPITAL OUTLAY correlated with wealth indicated greater fiscal neutrality. State revenues might have had less fiscal neutrality by this measure and redressed more of the wealth dependency in local and total capital outlay revenues. Low R squared values for STATE CAPITAL OUTLAY and LOCAL CAPITAL OUTLAY indicated that state revenues were not matched on a district-by-district basis to deficiencies in capital outlay revenue. Such matching might have caused reassessment of violations of horizontal equity for state capital outlay revenues demonstrated on dispersion measures, in terms of the increased horizontal equity for TOTAL CAPITAL OUTLAY. Regression curves for the variables indicated general increases, violating horizontal equity and wealth neutrality, in LOCAL CAPITAL OUTLAY and TOTAL CAPITAL OUTLAY for increasing wealth, except for the few highest wealth values.

Conclusions

Two conclusions are made from the analysis of the four variables, one addressing each of the research questions. The first conclusion was that greater horizontal equity was consistently reflected for FEFP over TOTAL CAPITAL OUTLAY. These measures included the Federal Range Ratio, the coefficient of variation, the relative mean deviation, the McLoone Index, the Gini Coefficient and Lorenz curves, and the squared correlation with wealth. Measures for FEFP therefore indicated greater horizontal equity and wealth neutrality than measures for TOTAL CAPITAL OUTLAY.

The second set of conclusions was developed from the comparison of the components of capital outlay to each other and to total capital outlay. LOCAL CAPITAL OUTLAY was less fiscally neutral than STATE CAPITAL OUTLAY, and less neutral than TOTAL CAPITAL OUTLAY, as demonstrated by greater R squared values and a higher Gini coefficient. Similarity of quadratic equations indicates a strong relationship between LOCAL CAPITAL OUTLAY and TOTAL CAPITAL OUTLAY. STATE CAPITAL OUTLAY, with lower R squared values, did not significantly alter the lack of wealth neutrality of LOCAL CAPITAL OUTLAY and its negative relationship with TOTAL

CAPITAL OUTLAY. Large inputs to several low-wealth districts did not change the overall pattern, and low correlation of LOCAL CAPITAL OUTLAY and STATE CAPITAL OUTLAY demonstrated that state revenues did not directly address local wealth deficiencies on a district-by-district basis. Dispersion measures were mixed; large state outliers lessened horizontal equity for STATE CAPITAL OUTLAY in comparisons of range and restricted range and in the coefficient of variation, and low local values at the bottom of the distributions lessened horizontal equity for LOCAL CAPITAL OUTLAY on the Federal Range Ratio. These components obtained approximately equal measures on the McLoone Index and the Relative Mean Deviation. It was concluded that there was a lack of wealth neutrality in TOTAL CAPITAL OUTLAY. This situation was explained by a strong lack of wealth neutrality in LOCAL CAPITAL OUTLAY, which was largely unmitigated by a wealth-neutral STATE CAPITAL OUTLAY in spite of large aid to some low-wealth districts.

Recommendations

The conclusion that there is less horizontal equity and fiscal neutrality for capital outlay measures than for general educational expenditures in Florida suggests that there may be one or more methodologies which would, in such an analysis as the one conducted in this research, demonstrate more horizontal equity and more wealth neutrality than the current system of capital outlay revenue distribution. It is therefore recommended that several potential alternative models of capital outlay revenue distribution be analyzed for horizontal equity and wealth neutrality, as has been done in this research, in comparison with the current system of capital outlay revenue allocation.

Recommendations for Further Research

The next clear direction for research in this area would be an analysis of several years' revenues, to examine whether single-year trends are confirmed when several years' values are analyzed. Correlations in several areas may strengthened if several years' revenues are taken into account; patterns not readily observable in the variability of the effort for a single year may emerge over a longer period. Additionally, trends in provision of state and local support may become clear in a multiyear study; is state or local support increasing or decreasing as a percentage of local effort over time?

Summary

Analysis of the four variables on a wide variety of equity measures indicates that this wide range of analysis yields a quantity of important information about the equity of capital outlay revenues and revenue components compared to each other and FEFP on both horizontal equity and fiscal neutrality measures. Measures for FEFP indicated greater horizontal equity and wealth neutrality for this variable than for TOTAL CAPITAL OUTLAY. Comparison of capital outlay components on dispersion measures was mixed. The lack of wealth neutrality in TOTAL CAPITAL OUTLAY, contributed to by a strong lack of wealth neutrality in LOCAL CAPITAL OUTLAY, was largely unmitigated by a wealth-neutral STATE CAPITAL OUTLAY in spite of large aid to some low-wealth districts.

APPENDIX
WFTE, FEFP, ROLL, AND CAPITAL OUTLAY REVENUES FOR ALL FLORIDA DISTRICTS
1988-1989

DISTRICT	WFTE	FEFP	ROLL
ALACHUA	31,205.98	72,107,753	2,916,998,193
BAKER	5,172.15	12,418,130	148,165,532
BAY	27,830.68	63,261,486	3,302,565,955
BRADFORD	5,238.42	12,523,790	217,606,845
BREVARD	63,648.32	149,478,061	10,368,847,957
BROWARD	199,245.52	493,954,758	40,095,220,062
CALHOUN	2,627.85	6,570,413	121,971,262
CHARLOTTE	14,203.91	34,435,086	3,717,040,467
CITRUS	14,193.41	33,385,159	2,848,188,603
CLAY	24,704.58	57,575,718	1,866,739,772
COLLIER	24,649.00	62,210,473	9,253,062,974
COLUMBIA	9,667.11	21,918,149	538,401,256
DADE	394,245.43	983,721,668	55,768,339,130
DE SOTO	5,132.52	12,719,338	440,423,967
DIXIE	2,186.06	5,462,887	145,645,093
DUVAL	133,882.00	310,973,176	15,625,961,723
ESCAMBIA	54,786.85	125,616,697	4,372,157,593
FLAGLER	4,596.91	11,563,134	1,197,574,358
FRANKLIN	1,816.04	4,786,965	274,138,125
GADSDEN	10,510.21	25,149,094	357,039,121
GILCHRIST	2,083.34	5,371,336	116,613,901
GLADES	1,097.46	2,874,879	291,979,126
GULF	2,830.31	7,153,882	394,918,300
HAMILTON	2,987.90	7,287,688	348,883,198
HARDEE	5,666.25	13,230,696	467,548,823
HENDRY	6,904.07	16,921,436	878,386,532
HERNANDO	14,035.94	33,182,975	2,313,810,864
HIGHLANDS	10,856.71	26,263,214	1,635,816,986
HILLSBOROUGH	160,353.35	375,717,973	20,799,295,740
HOLMES	3,859.87	9,673,696	137,766,188
INDIAN RIVER	13,458.93	32,828,428	3,778,132,475
JACKSON	9,903.73	23,652,586	414,330,524
JEFFERSON	2,685.05	6,602,516	147,117,660
LAFAYETTE	1,206.97	3,080,396	70,289,290
LAKE	25,917.03	59,762,053	2,942,869,341
LEE	51,533.57	122,880,610	12,543,395,842
LEON	36,739.34	84,420,901	3,619,365,394
LEVY	5,892.90	14,831,229	430,158,825

DISTRICT	WFTE	FEFP	ROLL
LIBERTY	1,305.91	3,306,906	81,362,729
MADISON	3,800.80	9,009,681	188,802,755
MANATEE	32,095.40	76,140,469	6,627,630,005
MARION	34,327.59	78,072,965	3,945,493,608
MARTIN	15,140.81	36,965,761	5,374,244,904
MONROE	10,167.13	26,639,040	4,468,117,781
NASSAU	10,055.60	24,410,562	1,079,862,021
OKALOOSA	30,643.51	69,511,610	3,038,151,109
OKEECHOBEE	6,799.90	16,027,274	613,718,763
ORANGE	122,721.52	294,627,637	23,484,387,206
OSCEOLA	19,217.65	45,447,857	3,075,385,105
PALM BEACH	129,286.38	321,650,609	38,965,602,607
PASCO	40,476.36	92,443,093	5,780,200,338
PINELLAS	125,239.30	293,690,954	25,601,234,201
POLK	79,942.48	181,314,698	9,069,558,754
PUTNAM	13,750.30	33,093,844	1,745,721,318
SANTA ROSA	15,954.78	37,700,513	2,722,116,153
SARASOTA	23,464.70	54,943,627	5,207,223,640
SEMINOLE	17,380.59	39,745,464	1,791,604,553
ST. JOHNS	38,801.27	93,976,489	11,264,092,981
ST. LUCIE	54,543.51	129,389,181	7,283,785,782
SUMTER	6,008.94	14,480,804	388,927,856
SUWANNEE	6,549.45	15,708,040	325,661,206
TAYLOR	4,059.41	10,739,300	461,193,667
UNION	2,180.61	5,484,765	67,843,117
VOLUSIA	55,209.41	129,458,293	9,444,683,050
WAKULLA	3,604.20	8,773,102	199,407,231
WALTON	5,099.51	12,715,712	1,123,400,704
WASHINGTON	4,617.76	11,259,218	204,094,075

DISTRICT	LOCAL CAPITAL OUTLAY	STATE CAPITAL OUTLAY	LOCAL DEBT SERVICE	STATE DEBT SERVICE
ALACHUA	4,914,089	3,664,431	3,040,824	693,911
BAKER	347,097	3,366,314	31,151	377,770
BAY	3,921,180	2,202,473	26,356	146,119
BRADFORD	24,425	206,007	26,268	333,776
BREVARD	29,020,425	7,189,809	153,490	2,256,961
BROWARD	81,439,286	17,747,807	14,257,150	5,065,548
CALHOUN	7,704	66,229	27,036	49,379
CHARLOTTE	2,785,153	2,007,696	3,956,166	413,388
CITRUS	4,593,366	1,598,000	18,195	331,880
CLAY	2,987,691	2,245,853	21,453	720,303
COLLIER	14,439,055	4,128,774	1,842,995	434,306
COLUMBIA	914,535	12,279,709	41,329	448,918
DADE	95,182,801	23,857,452	463,901	12,502,523
DE SOTO	711,471	311,696	20,910	335,703
DIXIE	10,284	207,571	6,171	288,001
DUVAL	40,533,135	11,601,885	14,252,260	3,000,383
ESCAMBIA	9,016,638	2,432,073	77,642	2,211,592
FLAGLER	1,068,233	725,289	1,427,802	271,054
FRANKLIN	430,518	49,886	30,532	433,532
GADSDEN	88,445	1,376,148	9,331	171,283
GILCHRIST	500	189,604	2,932	68,627
GLADES	486,054	26,944	11,256	223,250
GULF	60,361	286,888	101,943	308,305
HAMILTON	27,604	312,729	75,174	223,250
HARDEE	568,961	250,468	74,405	470,718
HENDRY	1,408,430	459,547	844,334	286,046
HERNANDO	4,568,149	2,249,657	3,045,357	471,062
HIGHLANDS	3,366,444	369,269	325,646	948,355
HILLSBOROUGH	36,298,392	20,680,284	12,922,925	5,258,344
HOLMES	284,832	646,267	163,289	309,015
INDIAN RIVER	3,494,279	1,435,393	2,123,319	308,564
JACKSON	100,811	580,509	29,087	613,885
JEFFERSON	272,811	691,238		65,545
LAFAYETTE	26,751	61,127	18,896	158,317
LAKE	4,742,935	3,040,045	76,011	728,136
LEE	19,187,046	5,664,704	33,638	1,510,131
LEON	8,878,529	3,120,779	4,575,646	949,124
LEVY	680,547	482,462	6,324	562,786
LIBERTY	5,605	54,206	6,083	151,000
MADISON	8,238	223,628	38,225	409,628
MANATEE	11,018,171	3,284,146	1,625,697	575,900
MARION	3,736,835	2,910,227	4,077,591	764,396
MARTIN	8,122,425	1,168,623	1,366,048	550,847
MONROE	902,053	915,513	288	268,059
NASSAU	1,791,333	1,199,717	23,417	417,079
OKALOOSA	4,133,477	2,712,272	28,492	1,011,410
OKEECHOBEE	899,162	959,040	14,299	457,822
ORANGE	42,167,685	8,432,704		2,259,134

DISTRICT	LOCAL CAPITAL OUTLAY	STATE CAPITAL OUTLAY	LOCAL DEBT SERVICE	STATE DEBT SERVICE
OSCEOLA	5,489,761	2,785,689	4,284,357	485,449
PALM BEACH	75,323,803	5,473,461	25,288,069	2,360,711
PASCO	10,223,750	3,920,248	7,830,937	1,624,881
PINELLAS	43,945,506	9,006,214	190,500	8,347,973
POLK	10,908,001	6,954,197		1,832,324
PUTNAM	1,457,780	1,004,624	2,440,827	438,304
SANTA ROSA	2,911,161	2,518,338	149,948	615,454
SARASOTA	17,573,387	4,350,831	630,635	1,229,913
SEMINOLE	5,634,464	4,538,242	9,803,575	1,119,015
ST. JOHNS	4,571,824	1,025,554	12,461	392,497
ST. LUCIE	5,461,020	2,627,204	2,752,181	785,965
SUMTER	589,416	564,566	39,189	328,877
SUWANNEE	573,707	10,447,470	1,122	153,734
TAYLOR	693,357	524,621	8,790	204,155
UNION	103,735	209,597	5,359	268,454
VOLUSIA	19,363,022	6,276,113	21,538,899	1,146,363
WAKULLA	498,588	5,161,316	145,394	352,039
WALTON	1,748,424	259,373	56,415	309,602
WASHINGTON	12,392	188,081		98,818

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BIOGRAPHICAL SKETCH

Gaylon Donn Currie was born on April 7, 1946, in Jacksonville, Florida. In 1964 he was graduated from William R. Boone High School in Orlando, Florida. He was awarded a National Honor Society scholarship, and attended the University of Florida. He received a Bachelor of Arts degree in American History in 1968, a Master of Arts in Teaching degree in American History in 1972, and an Educational Specialist degree in 1976. He was awarded a Ford Foundation Fellowship in 1968, and an E.P.D.A. Title II Fellowship in 1973. He has taught American History and G.E.D. courses and managed a microcomputer laboratory at the community college level, and worked as a computer software documentation consultant. While a student in his current program, he participated in research on the Beginning Principal Study, and presented three papers arising from this project at national conventions of the American Education Research Association. He also co-authored two articles in Becoming a Principal: The Challenges of Beginning Leadership. He was selected in 1991 to participate in the National Graduate Student Research Seminar in Educational Administration, sponsored by the University Council for Educational Administration. He has one son, Jason Gabriel.

I certify that I have read this study and that in my opinion it conforms to acceptable standards of scholarly presentation and is fully adequate, in scope and quality, as a dissertation for the degree of Doctor of Philosophy.

R. Craig Wood, Chair
Professor of Educational
Leadership

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David S. Honeyman
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